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ABSTRACT

The National Assessment of Educational Progress (NAEP) methods and procedures used in the 1979-80 assessment of reading and literature are described. The objectives of the assessment are categorized into four main areas. These include values reading and literature, comprehension of written work, response to written work, and application of study skills in reading. The redevelopment of objectives, development of exercises which measure performance against those objectives, the preparation of assessment materials, sampling, data collection, scoring, data analysis, and reporting are outlined. The primary type of information provided in this report is a description of procedures used in the assessment program. Appendices include results for population subgroups, sample forms used to obtain background information, computation of achievement measures, and a glossary of national assessment terms. (Author/SW)

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PROCEDURAL HANDBOOK: 1979-80 READING AND LITERATURE ASSESSMENT

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PROCEDURAL HANDBOOK:

1979-80 READING AND LITERATURE ASSESSMENT

Report No. 11-RL-40

by the
National Assessment of Educational Progress

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FOREWORD

When the U.S. Office of Education was chartered in 1867, one charge to its commissioners was to determine the nation's progress in education. The National Assessment of Educational Progress (NAEP) was initiated a century later to address, in a systematic way, that charge.

Since 1969, the National Assessment has gathered information about levels of educational achievement across the country and reported its findings to the nation. It has surveyed the attainments of 9-year-olds, 13-year-olds, 17-year-olds and adults in art, career and occupational development, citizenship, literature, mathematics, music, reading, science, social studies and writing. All areas have been periodically reassessed in order to detect any important changes. To date, National Assessment has interviewed and tested nearly 1,000,000 young Americans.

Learning-area assessments evolve from a consensus process. Each assessment is the product of several years of work by a great many educators, scholars and lay persons from all over the nation. Initially, these people design objectives for each subject area, proposing general goals they feel Americans should be achieving in the course of their education. After careful review, these objectives are given to writers, whose task is to create exercises (items) appropriate to the objectives.

When the exercises have passed extensive reviews by subject-area specialists, measurement experts and lay persons, they are administered to probability samples. The people in these samples are selected in such a way that the results of their assessment can be generalized to an entire national population. That is, on the basis of the performance of about 2,500 9-year-olds on a given exercise, we can make generalizations about the probable performance of all 9-year-olds in the nation.

After assessment data have been collected, scored and analyzed, the National Assessment publishes reports and disseminates the results as widely as possible. Not all exercises are released for publication. Because NAEP will readminister some of the same exercises in the future to determine whether the performance levels of Americans have increased, remained stable or decreased, it is essential that they not be released in order to preserve the integrity of the study.

ACKNOWLEDGMENTS

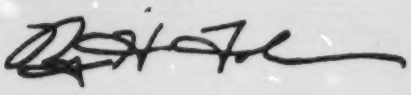
Assessing reading performance of young Americans throughout the nation is an undertaking of major proportions. Certainly it could not have become a reality without substantial contributions by many people, not the least of whom are the students, teachers and administrators who cooperated so generously.

Special thanks are due to the dozens of consultants -- both subject-area specialists and lay persons -- who reviewed the materials used in the three reading assessments under the general guidance of the National Assessment of Educational Progress (NAEP) staff. Particular acknowledgment is given to Carita Chapman, Bureau of Reading Improvement, Chicago, Illinois; Charles Cooper, University of California at San Diego; Anthony Petrosky, University of Pittsburgh, Pennsylvania; Beverly Roller, Jefferson County Public Schools, WheatRidge, Colorado; Robert Schreiner, University of Minnesota; and Dorothy Strickland, Columbia University, New York, all of whom provided special assistance in several areas of the assessment.

Our gratitude is also extended to the Reading/Literature Advisory Committee (see Appendix A) and other reading experts who participated in advisory and interpretive conferences for the three reading assessments. The staff at NAEP appreciates the insights provided by these distinguished education and subject-area specialists.

Administration of exercises was handled by the Research Triangle Institute. Scoring and processing were performed by the Westinghouse Data-Score Systems (formerly the Measurement Research Center), Iowa City, Iowa, and by the National Assessment staff. Dan Duse and Donna Benson deserve special credit for their excellent work in supervising and processing the scoring of open-ended exercises.

Every assessment is the result of a collaborative effort by the National Assessment staff. Many persons contributed to the reading assessments. Special thanks are extended to Nancy Mead for development and analysis; Michael Noe for development, analysis and scoring; Rex Brown for development and editorial supervision; Kay Barrow for technical planning and analysis; Ina Mullis for scoring and technical guidance; Donald Searls for sampling and analysis guidance; Dunlap Scott for coordinating data collection; John Kalk, Suzie Sullivan and Gwen Edwards for data processing support; Ava Powell for technical support; and Marci Reser and Deborah Houy for report production.



Roy H. Forbes
Director

INTRODUCTION

The National Assessment of Educational Progress (NAEP) first assessed reading and literature achievement in separate assessments during the 1970-71 school year. Since that time, reading has been assessed twice as a discrete learning area (1974-75 and 1979-80) and reading and literature have been combined for a joint assessment in 1979-80. Each assessment surveyed the achievement and attitudes of American 9-, 13- and 17-year-olds, using a deeply stratified, multistage probability sample design.

To measure changes in reading performance between 1970-71, 1974-75 and 1979-80, approximately half of the exercises assessed in the first assessment were reassessed in the second and third under almost identical administrative conditions. To measure the status of reading/literature achievement in 1979-80, National Assessment consultants developed new objectives and developed additional exercises to provide coverage of the new objectives. Some 1970-71 literature items were reassessed.

Approximately 29,000 9-year-olds, 41,000 13-year-olds and 36,000 17-year-olds participated in the 1979-80 reading assessment. Because National Assessment reports results for groups of students, not individuals, it is not necessary for each student to respond to every item (exercise).[1] Each respondent completed only one item booklet of about 45 minutes in length. Between 2,500 and 2,900 students responded to each booklet. In 1979-80 there were 11 exercise booklets for 9-year-olds, 15 booklets for 13-year-olds and 14 booklets for 17-year-olds.

The exercises for each assessment were administered by a professional data collection staff to minimize the burden on participating schools and to maximize uniformity of assessment conditions. Instructions were recorded on a paced audio tape and played back to students to ensure that all students moved through the packages at the same speed.

The majority of the items were multiple-choice; a few exercises were open-ended. Each item included one or more item parts.

Multiple-choice items were scored by an optical scanning machine; open-ended items were hand-scored by trained scorers using scoring guides developed to define categories of acceptable and unacceptable responses.

National Assessment reports estimated percentages of correct responses for single items. When a report indicates that "85% of the 17-year-olds gave a correct response," it means that an

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[1]National Assessment uses the term "exercise" to mean an assessment item. The terms "exercise" and "item" are used interchangeably in this report.

estimated 85% of the 17-year-olds would have given a correct response if all the 17-year-olds in schools across the country had been assessed. In addition to reporting national results, National Assessment provides data on the performance of various population subgroups within the national population, defined by sex, race, region of the country, size and type of community lived in and level of parental education. National Assessment also aggregates percentages of success on various sets of items to provide data on changes in performance between assessments and on the differential performance of population subgroups.

This handbook describes the procedures used to develop, administer and analyze the results of the 1979-80 reading/literature assessment. In doing so, it will touch briefly on the characteristics of earlier reading and literature assessments and will describe changes in goals and methods employed in each assessment. The primary purpose of this handbook is to provide detailed procedural information for people interested in replicating the assessment or in need of more information than is provided in the reports containing assessment data. The eight chapters cover objectives redevelopment, exercise creation, preparation of assessment booklets, sampling, data collection, scoring, data analysis and reporting. Each chapter explains the basic procedures used for the 1979-80 assessment, contrasts the procedures to those used in earlier years (if there were changes) and discusses relevant theoretical and practical issues.

Appendicular materials cover definitions of reporting groups, forms used to gather background information about students and schools, response rates, computation of achievement measures and procedures for smoothing respondent weights. A glossary of National Assessment terms is provided at the end of the book.

NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS

Errata Sheet for Report 11-RL-40
Procedural Handbook:
1979-80 Reading and Literature Assessment
September 1981

Page 15 The last complete sentence in the left-hand column should read:

Respondents were given the opportunity to complete up to three assessment booklets and were remunerated at the rate of $5.00 each for one or two completed booklets, or $20.00 for three booklets.

Page 20 Right-hand column, second full paragraph, last sentence, "Qualitative ranks were assigned...information was obtained." This sentence should be moved to the end of the next paragraph, following the words "supporting the emotion."

Page 26 A footnote reference should be added to the last word -- "impact.[5]" The footnote should read:

[5]Fourteen exercises included in the 1970-71 and 1974-75 assessments were not administered in the 1979-80 assessment as the stimulus materials did not meet current standards of freedom from bias and stereotyping. The summary measures were recomputed to exclude these exercises from the previously reported results for 1970-71 and 1974-75.

Page 78 Table E-2, second to last line -- "<4, <8, 12" -- should read:

">4, >8, 12"

CHAPTER 1

OBJECTIVES REDEVELOPMENT

The primary goal of the National Assessment of Educational Progress (NAEP) is to report on the current educational status of young Americans and to monitor any changes in achievement over time. For each learning area to be assessed, NAEP asks consultants to develop objectives that define the subject area. Since the objectives provide guidelines for exercise developers, consultants are asked to include examples of the knowledge, skills and attitudes to be assessed at each age level.

Education in America is a collaborative enterprise involving a great many people with widely differing philosophies. Providing information about education nationwide would be considerably easier if there were consensus about the means and ends of American education, but the fact is that Americans have conflicting and sometimes contradictory values regarding the goals of education and the means for achieving them. To develop an assessment that is truly national in scope and takes into account the diversity of curricula, values and goals across the country, National Assessment employs a consensus process for developing objectives, with representation of many different groups of people.

Several types of consultants help to develop National Assessment objectives. College and university specialists in a learning area ensure that the objectives include important concepts that the schools should be teaching. Educators, including classroom teachers, curriculum supervisors and persons involved in teacher education, make sure that the objectives describe concepts, skills and attitudes that the schools should be teaching and those that they presently are teaching. Concerned citizens, parents and other interested lay persons must agree that the objectives are important for young people to achieve, are free of educational jargon and are not biased or offensive to any groups. Consultants are selected to represent different regions of the country and minority groups. They also represent a range of experience with students of different ages and community types.

When the reading and literature areas were merged into a single assessment, two sets of prior objectives existed for each (see Tables 1 and 2). The first reading objectives were written in the late 1960s under the direction of Science Research Associates. Comprehensive in scope and very detailed, they addressed literary as well as nonliterary texts, literary terms and skills as well as terms and skills more closely associated with reading instruction (Table 1). In contrast, the second reading objectives, written some years later, were much less detailed and concentrated solely upon the goals of

TABLE 1. Reading Objectives Outlined

Objectives for 1970-71 Reading Assessment[1]

I. Comprehend what is read
- A. Read individual words
- B. Read phrases, clauses, sentences
- C. Read paragraphs, passages and longer works

II. Analyze what is read
- A. Be able to trace sequences
- B. Perceive the structure and organization of the work
- C. See the techniques by which the author has created his effects

III. Use what is read
- A. Remember significant parts of what is read
- B. Follow written directions
- C. Obtain information efficiently

IV Reason logically from what is read
- A. Draw appropriate inferences from the material that is read and "read between the lines" where necessary
- B. Arrive at a general principle after examining a series of details
- C. Reason from a general principle to specific instances

V. Make judgments concerning what is read
- A. Relate what is read to things other than the specific material being read
- B. Find and use appropriate criteria in making judgments about what is read
- C. Make judgments about a work on the basis of what is found in the work itself

VI. Have attitudes about and an interest in reading
- A. Depth of interest in reading
- B. Motives for reading
- C. Quantitative measures and reading interest

Objectives for 1974-75 Reading Assessment[2]

I. Demonstrate behavior conducive to reading
- A. Demonstrate values related to reading
- B. Assess the readability of materials
- C. Demonstrate knowledge of their own reading ability

II. Demonstrate word identification skills
- A. Know the letters of the alphabet
- B. Apply knowledge of sound symbol relationships
- C. Apply structural analysis techniques
- D. Possess basic sight vocabulary
- E. Use context for word identification

III. Possess skills for reading comprehension
- A. Utilize written language conventions as comprehension aids
- B. Demonstrate literal understanding of material read
- C. Demonstrate inferential understanding of material read

IV. Use a variety of approaches in gathering information
- A. Demonstrate flexibility in adapting their rate of reading to suit their purpose(s) and the nature of the material
- B. Possess reading study skills
- C. Use reference materials efficiently

Objectives for 1979-80 Reading/Literature Assessment[3]

I. Values reading and literature
- A. Values the benefits of reading for the individual
- B. Appreciates the cultural role of written discourse as a way of transmitting, sustaining and changing the values of a society

II. Comprehends written works
- A. Comprehends words and lexical relationships
- B. Comprehends propositional relationships
- C. Comprehends textual relationships

III Responds to written works in interpretive and evaluative ways
- A. Extends understanding of written works through interpretation
- B. Evaluates written works

IV. Applies study skills in reading
- A. Obtains information from nonprose reading facilitators
- B. Uses the various parts of a book
- C. Obtains information from materials commonly found in libraries or resource centers
- D. Uses various study techniques

[1] *Reading Objectives*, 1970.
[2] *Reading Objectives, Second Assessment*, 1974.
[3] *Reading and Literature Objectives, 1979-80 Assessment*, 1980.

TABLE 2. Literature Objectives Outlined

Objectives for 1970-71 Literature Assessment[1]

I. Read literature of excellence
   - A. Be acquainted with a wide variety of literary works
   - B. Understand the basic metaphors and themes through which man has expressed his values and tensions in Western culture

II. Become engaged in, find meaning in and evaluate a work of literature
   - A. Respond to a work of literature
   - B. Find meanings in a work of literature
   - C. Evaluate a work of literature

III. Develop a continuing interest and participation in literature and the literary experience
   - A. Be intellectually oriented to literature
   - B. Be affectively oriented to literature
   - C. Be independently active and curious about literature
   - D. Relate literary experience to one's life

Objectives for Second Literature Assessment[2] (Cancelled)

I. Experiences literature -- is aware that literary qualities exist in a variety of forms. Seeks experiences with literature in any form, from any culture
   - A. Listens to literature
   - B. Reads literature
   - C. Witnesses literature

II. Responds to literature -- responds to literature in any form, from any culture, in a variety of ways -- emotionally, reflectively, creatively -- and shares responses with others
   - A. Responds emotionally -- participates emotionally in the world of a work of literature
   - B. Responds reflectively -- understands a work of literature by reflecting upon it in a variety of ways
   - C. Responds creatively -- uses language imaginatively in response to a work of literature
   - D. Shares responses with others -- shares emotional, reflective and creative responses in a variety of ways

III. Values literature -- recognizes that literature plays a significant continuing role in the experience of the individual and society
   - A. Recognizes that literature may be a source of enjoyment
   - B. Recognizes that experience with literature may be a means of developing self-understanding and personal values
   - C. Recognizes that experience with literature may be a means of understanding the nature of man and the diversity of culture
   - D. Recognizes that literature and society may influence each other
   - E. Recognizes that literature may be a significant means of transmitting and sustaining the values of a culture

Objectives for 1979-80 Reading/Literature Assessment[3]

I. Values reading and literature
   - A. Values the benefits of reading for the individual
   - B. Appreciates the cultural role of written discourse as a way of transmitting, sustaining and changing the values of a society

II. Comprehends written works
   - A. Comprehends words and lexical relationships
   - B. Comprehends propositional relationships
   - C. Comprehends textual relationships

III. Responds to written works in interpretive and evaluative ways
   - A. Extends understanding of written works through interpretation
   - B. Evaluates written works

IV. Applies study skills in reading
   - A. Obtains information from nonprose reading facilitators
   - B. Uses the various parts of a book
   - C. Obtains information from materials commonly found in libraries or resource centers
   - D. Uses various study techniques

[1] *Literature Objectives*, 1970.
[2] *Literature Objectives, Second Assessment*, 1975.
[3] *Reading and Literature Objectives, 1979-80 Assessment*, 1980.

reading instruction defined quite narrowly. Consultants felt that reading should be differentiated from literature since each was a separate assessment area and a separate instructional field in the schools. The second objectives were also somewhat more behaviorally oriented and more directly tied to what might be measurable.

The first literature objectives, developed by Educational Testing Service, were keyed to activities in typical English courses (Table 2). They stressed knowledge of classic works, skills necessary for interpreting works and activities that promote involvement with literary experience. They ignored skills involved in learning to read. The objectives developed for the 1975-76 literature assessment (which, for financial reasons, never took place) were quite different. Rejecting the notions that "literature of excellence" could be defined or that acquaintance with classics could be assessed meaningfully, the consultants placed more emphasis on response and valuing. Instead of defining literature as "great books," they defined it as "language used imaginatively" and created objectives designed to determine how much exposure students have had to imaginative language in a number of social and academic contexts. Again, the objectives made no mention of reading skills per se.

These were the four documents that served as a base for developing the 1979-80 reading/literature assessment objectives. The advisory committee charged with doing this felt that, although there was some overlap between the goals of reading and literature instruction, there were also areas unique to each. Consequently, they negotiated general objectives that incorporated major features of the previous sets but dropped subobjectives that no longer fit or had proven extremely difficult or impossible to assess.

The objectives for the 1979-80 assessment are categorized into four major areas: (1) Values Reading and Literature, (2) Comprehends Written Works, (3) Responds to Written Works and (4) Applies Study Skills in Reading. The objectives in these areas have been changed somewhat from previous objectives in reading and literature, as well as merged. The changes are most evident in the area of comprehension.

The comprehension objective deals with understanding the important meanings of written materials. Researchers and educators are still uncertain about how individuals derive meaning from the printed word. However, most agree that the process goes beyond the simple decoding of print into a message. It appears that it is a much more interactive process in which the reader brings his or her other knowledge and experience to bear in the reading task. This is evident, for example, in the various interpretations that different readers may derive from the same material. It is also seen in the activity of "reading between the lines." It seems clear, therefore, that meaning is not in the print alone.

The comprehension objective reflects this view of reading by focusing on the understanding of the important meanings that may be derived from written works; these meanings are described in terms of propositions. A proposition is created through the interaction of the reader and the printed material. To understand

propositions, the reader must recognize the relationships between the concepts or ideas that can be derived from the printed material and use these relationships in conjunction with his or her own background, knowledge and experience.

The major objective concerned with response to written works differs from the comprehension objective in that the term "comprehension," in the latter, is limited to the largely unconscious activity of understanding primary meaning in the process of reading. Conscious, deliberate, overt attempts to extend understanding after something has been read -- for example, analysis or interpretation of a poem, class discussion, critical essays, and so forth -- are defined as response to written works. Implicit in the definition of the response objective is the suggestion that a highly desirable consequence of reading is action. Much that has been written is intended not only to increase understanding but to provoke deliberate responses.

The remaining two major objectives -- Values Reading and Literature, Applies Study Skills in Reading -- have not changed much from objectives of previous assessments.

There was considerable discussion among advisory committee members about the desirability of objectives dealing directly with word-attack skills, reading rate, and skimming and scanning skills. Although acknowledging that word-attack skills are important enabling skills for readers, a majority of the committee finally decided that they are not outcomes of reading and so should not appear as specific objectives. After examining previous NAEP assessments of reading rate and skimming and scanning and experimenting with new measures, the committee decided to assess these skills in a limited way, and to include them as part of the study skills objectives.

CHAPTER 2

DEVELOPMENT OF EXERCISES

The Exercise Development Framework

Assessments cannot be developed directly from objectives. There are a number of steps in between. In reading and literature, there were decisions to be made about the kinds of texts that would be used, the relative importance of certain objectives and the relevance of materials previously assessed to the new objectives. In addition, clarity about the theoretical underpinnings upon which the assessment, or parts of it, would rest was critical to ensure that exercises would provide information interpretable within particular constructs of the reading process.

First, in order to assure changes in performance over time in the 1979-80 assessment, it was decided that three booklets of items for each age group would consist of previously assessed items. These items measured performance on literal comprehension, inferential comprehension and reference skills, and were all items that had been assessed in both 1970-71 and 1974-75. The results for this portion of the 1979-80 assessment are reported in Three National Assessments of Reading: Changes in Performance, 1970-80 (1981).

In considering new items, the advisory committee felt that the 1979-80 objectives called for a wide range of reading materials spanning a continuum from utilitarian to poetic uses of language, requiring many kinds of inferencing, covering many topics of interest and appearing in many formats and contents. Accordingly, one of the first steps in exercise development was to specify and assemble such texts.

Another step was to decide which objectives should receive the most attention at each age. Table 3 shows the percentage of the assessment items devoted to each objective.

TABLE 3. Relative Weight of Objectives by Age — Figures Used to Guide 1979-80 Exercise Development

	Age 9	Age 13	Age 17
Valuing	10%	10%	10%
Comprehension	45	35	35
Responding	30	30	30
Study skills	10	20	20
General background information	5	5	5

Still another consideration was the relevance, after almost a decade, of materials from the first literature assessment. Consultants with expertise in literature instruction examined the old literature exercises in light of the new objectives and the extent to which certain exercise types proved useful the first time. In this process, some exercises were winnowed out while others were retained but not recategorized in terms of the new objectives. The rest (open-ended exercises) were recategorized in terms of the new objectives.

Also, prior to full-scale development of assessment materials, specifications were created for the entire assessment. The specifications provided overall direction by estimating how many exercises of particular types are necessary to adequately measure achievement of a particular objective or subobjective. They also provided detailed directions to exercise writers, specifying text type, measurement goals, domains being assessed and procedures for determining key aspects of text suitable for testing comprehension.

After the objectives had been roughed out, it was hoped that a process of "objectives amplification" would supply the specifications as well as a range of model exercises that exercise writers would only need to imitate. A series of meetings were devoted to amplification -- exhaustively defining the subparts of any objective, modeling the reader-text interactions that would presumably take place, describing the behaviors that would indicate successful achievement, establishing measurement parameters for each behavior and choosing suitable text types. The meetings generated thoughtful papers and considerable evidence that reading is a complicated process, but they did not generate the direct link between objectives and exercises that some advisors had hoped for. That link remains, in reading and literature as in other areas, indirect. But the many papers and discussions about the reading process and how to assess it did establish a loose, conceptual paradigm useful for guiding exercise development and interpreting results later on.

The paradigm can be roughly called a psycholinguistic model of the reading process because it assumes that meaning resides both in the reader and in the text and that comprehension involves both "top down" and "bottom up" kinds of cognitive processing. These assumptions affect (1) what kind of text can be used (naturally occurring text), (2) which parts of a text an exercise writer can use to assess a particular level of comprehension, (3) what kinds of distractors might be used and (4) how one might interpret the results of any question about a text. An assessment based even loosely upon psycholinguistic theory differs from one based on some other general model of the reading process primarily in its emphasis on comprehension as a holistic activity instead of a battery of measurable subskills. But whether the differences go beyond that in practical terms remains to be seen.

Item Development, Field Test, Review and Selection Procedures

Item writers worked in small groups at two centers to create items, and the groups then critiqued each others' work. Once items had been developed, critiqued and revised, they were reviewed by National Assessment staff. The results of these reviews were compiled and item

writers once again revised items. Surviving items were field-tested in schools across the country to discover potential problems in wording, directions or administrative procedures and to collect item statistics, timing information and scoring information. Schools were selected to represent high- and low-income communities as well as more typical communities. Tryout (field-tested) items were administered to students in at least four classrooms (approximately 100 students) at each of the ages assessed.

So that the field test would closely simulate the actual assessment field procedures, students recorded their answers in the exercise booklets; students heard directions and questions from an audio tape; and National Assessment staff members, rather than classroom teachers, administered the test. The students' responses to the items, as well as the administrators' reports of any field problems, helped both staff and consultants to evaluate and revise the exercises. Revised exercises were generally field-tested again.

After exercises were field-tested, the results were reviewed by National Assessment staff and panels of content experts, educators and lay persons from across the country. Exercises for each age group were reviewed for appropriateness by teachers who teach students at that age. Lay citizens, representing a variety of occupations and interests, also reviewed the exercises, checking for sex or racial/ethnic bias and considering the general importance of each exercise. The advisory committee worked with NAEP staff to examine the items judged to be successful by the review panels, and then the staff made the final selection of the items included in the 1979-80 assessment.

CHAPTER 3

PREPARATION OF ASSESSMENT MATERIALS

Preparation of Booklets and Audio Tapes

National Assessment uses a matrix sampling approach, with different nationally representative samples of students responding to different item booklets (see Chapter 4 for details). Since the Assessment's aim is to describe results for groups of students (males, blacks, students in the West, and so on), not individuals, it is not necessary for each student to respond to all the items. Each student responded to one booklet of items designed to be completed in a single class period.

Following the selection of exercises to be included in the assessment, National Assessment staff determined which exercises were to be included in the various booklets and sequenced them within the booklets. Booklets were constructed separately for each age level since students at different ages received different sets of exercises. Thus, exercises for 9-year-olds were not sequenced the same as those for 13-year-olds, and so forth. In 1979-80, there were 11 exercise booklets that contained reading/literature exercises for 9-year-olds, 15 such booklets at age 13 and 14 such booklets for 17-year-olds. Three booklets at each age contained reassessed reading items (items that had been included in two prior assessments). The remaining booklets were comprised of newly developed items. A few reassessed literature items from the 1970-71 assessment were dispersed across all packages -- those including reading change and those including newly developed items.

The following constraints were observed in preparing the 1979-80 exercise booklets:

1. Each booklet contained exercises of varying difficulty so that students would not become bored by many easy exercises or discouraged by many difficult exercises.

2. Exercises could not cue other exercises. In other words, the answer to one exercise could not be contained in another exercise in the same booklet.

3. Each booklet was timed so that it would take no more than 45 minutes -- the length of a typical class period -- of a student's time. Booklets contained approximately 30-35 minutes of exercise time and an additional 10-15 minutes of introductory material, instructions and background questions.

4. Booklets were designed to be, insofar as possible, parallel with respect to the number of different objectives measured and difficulty levels. Items measuring a particular objective were scattered throughout the booklets so that many different students

would respond to questions related to a particular objective.

National Assessment has constantly attempted to institute procedures to minimize difficulties connected with the testing situation so that results will be, as nearly as possible, an accurate reflection of what students know and can do. Considerable effort was devoted to developing clear instructions and procedures to help students perform as well as possible in the assessment situation. For example, students marked or wrote their responses directly in the assessment booklets, not on separate answer sheets. It was felt that this procedure would reduce possibilities for confusion in using additional sheets of paper, especially for the younger students. To minimize guessing, students were encouraged to select the "I don't know" response option included with multiple-choice items.

Paced audio tapes were prepared for each exercise booklet to ensure uniform assessment conditions across the country and to move students through the booklets at the same speed. Students listened to directions on the tape for answering exercises, but they had to read the texts and the response choices themselves.

Differences in Item Booklets in the 1970-71, 1974-75 and 1979-80 Assessments

National Assessment attempts to make assessment conditions for items measuring change identical from assessment to assessment so that any changes observed will be attributable to changes in achievement rather than a response to an altered testing condition. Although items were kept identical, the makeup of the item booklets was different for each reading, literature or reading/literature assessment. In 1970-71, reading and literature items were included in the same booklets. In 1974-75, reading items appeared only with other reading items; and in 1979-80, reading and literature again appeared with each other (excepting reading change items, which were packaged essentially the same way in the last two assessments).

CHAPTER 4

SAMPLING

This chapter gives an overview of the procedures used in designing and selecting the National Assessment samples for the 1970-71, 1974-75 and 1979-80 reading, literature and reading/literature assessments.[1] Sample design and selection for these assessments were conducted by the Research Triangle Institute, Raleigh, North Carolina, and monitored by National Assessment staff.

The target populations for each of the assessments included 9-year-olds and 13-year-olds attending school, as well as 17-year-olds,[2] both those enrolled in either public or private schools at the time of the assessment and those who either left school before graduating or graduated early. Adults, 26-35 years old, were also assessed in the 1970-71 assessment. However, assessment of adults is quite expensive, and in 1974-75 and 1979-80, funds to assess this population were not available. Age-eligible persons who were functionally handicapped to the extent that they could not participate in an assessment were not considered part of the target populations. Specific groups excluded were: non-English-speaking persons, those identified as nonreaders, persons physically or mentally unable to respond and persons in institutions or attending schools established for the physically or mentally handicapped.

National Assessment did not follow up specific individuals from one assessment to the next. In other words, the students who participated in the first assessment were not the same ones who participated in the second or third assessment. However, in each assessment year, participants were carefully selected to represent each age level. For example, at age 9, although different sets of probability samples were used for the three assessments, each set contained nationally representative samples of the population of students who were nine years old during that assessment year. Thus, if we say that 9-year-olds' achievement improved between 1975 and 1980, we mean that more students who were nine years old in 1980 correctly answered the same questions than did so in 1975.

The National Assessment samples were designed to provide approximately 2,500 respondents per exercise. These

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[1] For detailed information about the 1979-80 National Assessment sampling procedures, see Final Report...Sampling and Weighting Activities for Assessment Year 11 (1981). The National Assessment Approach to Sampling (1974) gives detailed information about the 1970-71 assessment.

[2] Definition of 1979-80 assessment age groups are: 9-year-olds -- born during calendar year 1970; 13-year-olds -- born during calendar year 1966; and 17-year-olds -- born October 1, 1962, through September 30, 1963.

numbers allow reporting of data for the nation and for the subgroups defined in Appendix B. In 1974-75, each booklet of exercises was administered to approximately 7,500 respondents, or triple the usual sample. This procedure enabled analysis and reporting of 1974-75 results for additional subgroups.

Overview of the National Assessment Sample Design

For all of its assessments, NAEP uses a deeply stratified, three-stage national probability sample design with oversampling of low-income and rural areas. In the first stage, the United States is divided into geographical units. In 1970-71 and 1974-75, these units were counties or groups of contiguous counties meeting a minimum population size requirement. In 1979-80, some counties containing large population centers were divided into more than one geographical unit. These units, called primary sampling units (PSUs), are stratified by region and size of community. From the list of PSUs, a sample of PSUs is drawn with probability proportional to population size measures, representing all regions and sizes of communities. Oversampling of low-income and extreme-rural areas is first performed at this stage by adjusting the estimated population size measures of such areas to increase sampling rates. In the current sampling procedures, Census Employment Survey Data are used within PSUs to further delineate and oversample low-income areas. Counties with high proportions of rural families are also oversampled.

In the second stage, all public and private schools within each PSU selected in the first stage are listed. Schools within each PSU are selected without replacement with probabilities proportional to the number of age-eligibles in the school.

The third stage of sampling occurs during the data collection period. A list of all age-eligible students within each selected school is made. A simple random selection of eligible students without replacement is obtained, and item booklets are administered to selected students. Specially trained personnel select the sample and administer the booklets.

Survey Weights

The number of PSUs, schools within PSUs and students within schools are determined by optimum sampling principles. That is, a sample design is utilized that will achieve the maximum precision for a given level of resources. Table 4 displays the

TABLE 4. Number of PSUs Selected and Schools Within PSUs Included in the Assessment in 1970-71, 1974-75 and 1979-80

	1970-71 Assessment		1974-75 Assessment		1979-80 Assessment	
	No. of PSUs	No. of Schools	No. of PSUs	No. of Schools	No. of PSUs	No. of Schools
Age 9	116	1,007	115	1,003	83	560
Age 13	116	1,029	115	972	83	534
Age 17	116	631	115	830	83	412

number of PSUs used and the number of schools in which assessment sessions were conducted, by age, for the 1970-71, 1974-75 and 1979-80 assessments. Appendix E gives information about the number of students assessed.

In order to locate those 17-year-olds who had left school prior to the assessment, half the schools in each PSU were randomly selected and asked to provide lists of potentially eligible dropouts for the three most recent school years and, for schools having 12th grades, lists of potentially eligible early graduates.

After receipt from the schools, the dropout and early graduate lists were screened to eliminate persons with ineligible birth dates and duplicate listings, and to establish the final-stage sampling frame of potentially eligible individuals for each school. The field staff attempted to locate each of the individuals in the sample and assess those found to be eligible. Respondents were given the opportunity to complete up to four of the assessment booklets and were remunerated at the rate of $5.00 for each completed booklet.

The 1970-71 assessment included an additional household survey aimed at both 17-year-olds not enrolled in school and young adults 26 to 35 years of age. However, this method of sampling is extremely costly and limited resources prohibited including such sampling techniques in the 1974-75 and 1979-80 assessments. Thus, for those two assessments, young adults were not included and 17-year-olds were located only by using the school sample design. Since only a small percentage of 17-year-olds not enrolled in school were found by using the household survey method, differences in the assessment samples are minimal.

Each respondent in the sample does not have the same probability of selection because some subpopulations are oversampled and because adjustments are made to compensate for student nonresponse and for some schools' refusals to participate. The selection probability for each individual is computed, and its reciprocal is used to weight each response in any statistical calculation to compensate for unequal rates of sampling and to ensure proper representation in the population structure. Procedures used to assign weights are discussed in Chapter 7 and Appendix F.

CHAPTER 5

DATA COLLECTION

National Assessment subcontracted data collection to the Research Triangle Institute for the 1979-80 reading/literature assessment. A professional data collection staff was used rather than school personnel to minimize the burden on participating schools and to ensure, insofar as possible, uniform administrative conditions across the country (Final Report...In-School Field Operations..., 1980). In all three assessments, NAEP staff worked closely with the subcontractors to ensure adherence to rigorous administrative standards.

Participation in the National Assessment is voluntary. NAEP makes every effort to encourage the schools selected in the sample to participate in the assessment, and National Assessment and Research Triangle Institute staffs have obtained high rates of school cooperation, as shown in Table 5 (Final Report...In-School Field Operations..., 1980, p. 40, Table 28). Student cooperation rates were also high.

TABLE 5. School Cooperation Rates, 1979-80 Assessment

Age	Percent of Eligible Schools Participating in 1979-80 Assessment
9	94.5
13	93.2
17	90.5
Overall	92.9

Each age group was assessed at approximately the same time of the school year in each of the assessments: 13-year-olds were assessed in October-December, 9-year-olds in January-February, in-school 17-year-olds in March-May and out-of-school 17-year-olds in June-July. In 1979-80, booklets were administered to groups of 10-25 students, with each group responding to only one of the booklets for their age level, except for out-of-school 17-year-olds who took up to three packages each. The groups varied in size depending on the number of eligible students and an estimate of the rate of nonresponse for a particular school. In 1970-71 and 1974-75, the planned session sizes were fixed at 12 students.

In each assessment, steps were taken to guarantee the anonymity of respondents. Students' names were listed with their booklet identification number so that scoring and processing personnel could go back to the school lists for data verification -- for instance, on background information -- if necessary. These lists did not leave the schools and were destroyed six months following the assessment in a school.

To provide information on respondents' backgrounds, school officials were asked to respond to a "principal's questionnaire," which included ques-

tions about the size and type of community served by the schools. In addition, in 1979-80, officials in schools were asked to respond to a "supplementary principal's questionnaire," which asked about reading/literature programs in the school. Students also provided information on their backgrounds through questions included in the item booklets. Samples of forms used to collect background information from students and school officials in the 1979-80 assessment appear in Appendix C.

The assessment administrator coded each student's birth date, sex, grade, racial/ethnic classification and identification number on his or her booklet. Administrators made a visual racial/ethnic identification at the time each student turned in his or her booklet. During the 1979-80 assessment, six different racial classifications were used: white, black, Spanish heritage, American Indian or Alaskan native, Pacific Islander or Asian, and unclassified. If an administrator was unsure of a student's racial/ethnic group, the administrator referred to the student's name or listened to the student talk to make the identification.

The assessment administrators did not ask students to give a racial identification for themselves; however, in 1979-80 17-year-old students were asked to provide this information in one of the background questions included in each exercise booklet.

Sample sizes of the classifications American Indian or Alaskan native and Pacific Islander or Asian were too small to permit reporting for these groups. Also, results for the group classified as Spanish heritage cannot be reported for separate exercises, only for aggregates of exercises.

Following data collection, assessment administrators sent completed booklets to the scoring contractor, Westinghouse DataScore Systems, Iowa City, Iowa. Booklets were checked to verify that correct administrative procedures were followed by the field staff. Coded identification information was also checked for accuracy; inconsistencies that could not be reconciled were sent back to the assessment administrator to be checked against the list of student names and identification numbers retained by the school for six months following the assessment.

CHAPTER 6

SCORING

Scoring and computer recording of data were contracted to Westinghouse DataScore Systems,[1] Iowa City, Iowa, for all three reading assessments. National Assessment has found it most efficient to have scoring done by an outside contractor and to have the same contractor do both the machine scoring and the open-ended, or hand, scoring. Booklets to be scored do not have to be shipped to another location when different scoring methods are needed; in addition, the scoring contractor has a trained staff of scoring personnel that can be called upon and augmented when National Assessment conducts a major scoring effort.

In the 1979-80 assessment, more than 90% of the items were multiple-choice and the rest were open-ended. Responses to multiple-choice exercises were read directly by an optical scanning machine. The scoring contractor employed a special staff to hand score open-ended exercises. Scorers were responsible for categorizing open-ended responses, using scoring guides that defined categories of acceptable and unacceptable responses. They then coded this information into ovals that could be read by the optical scanning machine.

For changes in performance to be measured accurately, scoring had to be the same for responses collected in each assessment year. For multiple-choice items, the same responses were scored correct in each year. Some open-ended items were short-answer reading items requiring rather objective scoring of a clerical nature. These were all reassessed items, and identical guides were used in 1979-80 as were used to categorize the 1970-71 and 1974-75 responses. Scorers were trained using sample responses from all three assessment years. Quality-control procedures were conducted by having scorers rescore papers from previous assessments along with the 1979-80 responses. A 5% subsample from each previous assessment was rescored, and percentages of agreement with the earlier scorings averaged approximately 99%.

Most of the open-ended scoring effort was concentrated on a variety of exercises that required at least paragraph length open-ended responses to poems and prose passages. Most of these items were developed for the 1979-80 assessment, although a few were 1970-71 literature items readministered to measure changes in performance. Scoring guides for these newly developed items were constructed using both field tryout data and actual assessment data. Scoring guides for the few reassessed items were revised in 1979-80, using both 1970-71 and 1979-80 assessment data, to be consistent with the guides constructed for items first administered

[1] Formerly the Measurement Research Center, Iowa City, Iowa.

in 1979-80. To ensure that scoring of the two sets of assessment data was identical, all 1970-71 responses to open-ended literature items were re-scored at the same time that the 1979-80 responses were scored.

Although the use of a variety of types of tasks and scoring guides increases the expense and complexity of the open-ended scoring task, it nevertheless provides a more comprehensive means of assessing students' abilities to respond to written works. Five different types of open-ended exercises were included in the 1979-80 assessment of "response to written works." Each required different skills and levels of ability on the part of the respondents and as such, required a different scoring procedure. Each type of responding task and scoring procedure is discussed below.

General responding tasks asked respondents to discuss the passage or poem presented, or to describe their thoughts or feelings about the text. It was expected that responses to this type of item would be highly text-dependent and would allow the writer to select from a variety of perspectives. The writer was given very little explicit focus for his/her response, and was therefore free to choose whichever approach seemed most natural. The scoring guide categories for this type of exercise are descriptive and do not readily lend themselves to quantitative ranking. The response categories scored were: egocentric, personal, emotional, retelling, inferencing, generalization, analysis, reference to other works and evaluation. At age 17 only, three of these categories were further divided into two levels each to provide more qualitative information: analysis (level 1 = superficial, level 2 = elaborated), other works (level 1 = general, level 2 = specific) and personal (level 1 = global, level 2 = analytic).

A second type of open-ended exercise is referred to as inferencing, and inferencing tasks required either general or specific inferences relating to the mood of, or a character in, the passage. Respondents were asked to describe the intent of the author, to describe the mood of the passage or to describe the character of the protagonist. These kinds of items require the reader to interpret the passage and to explain the interpretation by relating it to the text.

Qualitative differences in score points were dependent upon the identification of the intent, mood or character traits and upon the amount and nature of the supporting evidence provided. In addition, descriptive data were obtained concerning the source of the evidence -- whether it related to the content or form of the text, or whether it represented a subjective reaction on the part of the reader -- and the number of pieces of evidence provided by the writer. Qualitative ranks were assigned and, again, additional descriptive information was obtained.

Emotional responding tasks asked respondents to describe emotions or feelings aroused by the text. The scoring guide categorized both the identification of the emotion (or feeling) and the presentation of evidence supporting the emotion.

Analytic responding tasks asked the respondents to analyze a passage or poem. Successful responses were those that went beyond a superficial interpretation and provided a theme or meaning for the text. In addition, it was necessary that the respondents discuss the way in which some

feature(s) of the text contributes to the statement of the theme. These responses received only qualitative-rank scores. No further descriptive information was obtained.

The final type of open-ended exercise, evaluative responding tasks, asked students to evaluate particular poems or stories. Scoring guides for these exercises measured the respondents' abilities to state their criteria, and where appropriate, to provide examples from the text that were related to the criteria. Qualitative ranks were assigned to the various response types, and descriptive information was also assessed.

Westinghouse DataScore Systems and National Assessment staff worked together to train readers. In training sessions, readers were given the scoring guide for an item and responses that exemplified each scoring category. The reasons why responses were classified in particular categories were discussed; scorers' questions were answered and, if necessary, modifications were made to scoring guides. Readers then scored several papers and categorizations were discussed. This process continued until readers were familiar with the application of the scoring guides and was repeated for each task and separate age group assessed to be sure that scoring was consistent.

To further ensure the quality and consistency of scoring open-ended exercises, quality-control checks were conducted during the scoring of these exercises. At regular intervals, randomly selected responses were drawn from the total pool of responses for an item and read by randomly selected scorers. Both the responses and the scorers were selected without replacement; approximately 10% of the responses were included in the quality-control check. Scores for the quality-control readers were recorded, and the responses selected for quality control were then put back into the total pool of responses to be scored during the regular course of scoring. Following scoring of all responses, the two scores for quality-control responses were compared. If discrepancies in scoring became apparent, scorers were retrained and, on some occasions, work was rescored.

Percentages of agreement between quality-control and regular scoring were computed for each open-ended exercise. These data are summarized in Table 6.

Scoring for each age group began during the administration of the assessment to that age group.

TABLE 6. Average Percentages of Scorers' Agreement for 1979-80 Open-Ended Scoring, by Age Groups

Title	Average % of Agreement		
	Age 9	Age 13	Age 17
Somebody's Son	—	95.0	95.0
Somebody's Son (essay)	—	95.0	93.0
Good Dog	—	95.0	94.0
One of These Days	—	—	94.0
Old Dog	98.0	91.0	—
Mother to Son	—	91.0	91.0
i was you	—	—	93.0
Good Story	98.0	93.0	94.0
Good Poem	98.0	96.0	94.0
Check	—	96.5	—
Into My Heart	—	—	96.5
As the Cat	96.5	—	—
Rodeo	—	94.0	94.0

CHAPTER 7

DATA ANALYSIS

Measures of Achievement

The basic measure of achievement reported by National Assessment is the percentage of respondents answering a given item acceptably. This percentage is an estimate of the percentage of 9-, 13- or 17-year-olds who would respond acceptably to a given item if every 9-, 13- or 17-year-old in the country were assessed.

Percentages of acceptable responses are used because each item is designed as a separate measure of some aspect of an objective or subobjective. The purpose of National Assessment is to discover if more or fewer people are able to answer these items acceptably -- and thus meet the objectives -- over time.

In addition to providing results on individual items, National Assessment reports the average performance across groups of similar items -- for the learning area as a whole, for a particular theme, objective or subobjective, and so on. These results constitute the mean or arithmetic average of the estimates of performance on the group of items and is called the mean percentage correct. The items included in the calculation of a mean percentage usually are located in several exercise booklets and, thus, the mean percentage should not be construed as an average test score.

To present a general picture of changes in achievement, National Assessment describes the gains or losses on a group of exercises in terms of the differences in the average percentage of acceptable responses.

Unless the items summarized in the mean percentages of acceptable responses are identical, the means of one age group should not be compared with the means of another, since their values reflect both the choice of exercises and the performance of

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[1]Twenty-two empirical distributions of change measures from the 1969-70 and 1972-73 science assessments were used to generate Monte Carlo simulations of sampling distributions for several measures of central location. In addition to the mean and median, other measures of central location that were considered in the simulation studies included the average of the extremes, two forms of biweighted estimates and three forms of weight-matching estimation described by John W. Tukey in the research paper "Some Considerations on Locators Apt for Some Squeezed-Tail (and Stretched-Tail) Parents" (1975). In almost every case, the sampling stability of the mean change was as good as or better than that of the other measures studied.

the students. When only a few exercises are summarized by a mean, one should be especially cautious in interpreting results, since a small set of exercises might not adequately cover the wide range of potential behaviors included under a given objective or subobjective. The mean should be interpreted literally as the arithmetic average of the percentage of acceptable responses obtained from National Assessment samples on a specific set of exercises. It should not be construed as an average test score.

In addition to providing national results, National Assessment reports on the achievement of various subpopulations of interest. Groups are defined by region of the country, sex, race/ethnicity, size and type of community lived in, level of parents' education and grade in school (see Appendix B for definitions of these groups).

The difference between percentages or averages for a reporting group and that of the entire age group (nation) on an exercise is used to describe the performance of any reporting group relative to the entire age group. This difference is a positive number if the group achieved a higher percentage or average than the entire age group and is a negative number if the group achieved a lower percentage or average. For example, a group performance of +1.8% indicates that the percentage of responses for the group is 1.8 percentage points higher than the national percentage of responses for that age level.

In considering National Assessment's achievement measures, it is differences in performances between assessments, among groups and among ages, that are the most useful. By maintaining the same item or set of items in making these comparisons, we have a reasonable indicator of whether more or fewer people know or can do something judged important.

Procedures for estimating percentages of responses to exercises are dependent on the sample design. Each response by an individual was weighted and multiplied by an adjustment factor for nonresponse.[2] An estimate of the percentages of a particular age group that would have responded to a particular exercise in a particular way if the entire age group were assessed was defined as the weighted number of that type of response divided by the weighted number of all the responses. A similar ratio of weights was used to estimate percentages and averages for reporting groups or subpopulations of interest.[3]

Estimating Variability in Achievement Measures

National Assessment used a national probability sample at each age level to estimate the proportion of people who would complete an exercise in a particular way. The sample selected was one of a large number of all possible samples of the same size that could have been selected using the same sample design. Since an achievement measure computed from each of

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[2]Appendix D discusses nonresponse in assessment samples.

[3]Following the 1979-80 assessment, a weighting-class adjustment procedure was used to smooth estimated population proportions across the 10 assessments conducted between 1970-71 and 1979-80. A discussion of this procedure is included in Appendix F.

the possible samples would differ from one sample to another, the standard error of this statistic was used as a measure of the sampling variability among achievement measures from all possible samples. A standard error, based on one particular sample, serves to estimate that sampling variability.

In the interest of sampling and cost efficiencies, National Assessment uses a complex, stratified, multistage probability sample design. Typically, complex designs do not provide for unbiased or simple computation of sampling errors. A reasonably good approximation of standard error estimates of acceptable response percentages and averages was obtained by applying the jackknife procedure (Miller, 1964, pp. 1594-1705; Miller, 1968, pp. 567-82; Mosteller and Tukey, 1968) to first-stage sampling units within strata. Standard errors for achievement measures such as national percentages, group differences, means or mean differences for a particular assessment year were estimated directly, taking advantage of features of the jackknife procedure that are generic to all of these statistics.[4] Since samples for different assessments are independent, the standard errors of the differences in achievement measures between assessments can be estimated simply by the square root of the sum of squared standard errors from each of the assessments.

The standard error provides an estimate of sampling reliability for the achievement measures used by National Assessment. It is comprised of sampling error and other random error associated with the assessment of a specific item or set of items. Random error includes all possible nonsystematic error associated with administering specific exercises to specific students in specific situations. Random differences among scorers for open-ended items are also included in the standard errors.

National Assessment has adhered to a standard convention whereby differences between statistics are designated as statistically significant at the .05 level of significance. That is, differences in performance between assessment years or between a reporting group and the nation are highlighted with asterisks only if they are at least twice as large as their standard error. Differences this large would occur by chance in fewer than 5% of all possible replications of our sampling and data collection procedures for any particular reporting group or national estimates.

Controlling Nonrandom Errors

Systematic errors can be introduced at any stage of an assessment -- exercise development, preparation of exercise booklets, design or administrative procedures, field administration, scoring or analysis. These nonsampling, nonrandom errors rarely can be quantified, nor can the magnitude of the bias they introduce into the estimates be evaluated directly.

Systematic errors can be controlled in large part by employing uniform administrative and scoring procedures and requiring rigorous quality control in all phases of an assessment. If the systematic errors are the same from age to age or group to group,

[4] See Appendix E for a more detailed description of National Assessment's computation of standard errors.

then the differences in percentages or mean percentages are measures with reduced bias because subtraction tends to cancel the effect of the systematic errors.

Similarly, the effect of systematic errors in different assessment years can be controlled by carefully replicating in the second assessment the procedures carried out in the first. Differences in achievement across assessment years will also be measures with reduced bias since subtraction will again tend to cancel systematic errors.

Although it is not possible for every condition or procedure to remain exactly the same between assessments conducted several years apart, National Assessment has made every effort to keep conditions as nearly the same as possible. Changes in procedures described in this report were judged to have a relatively minor impact.

CHAPTER 8

REPORTS ABOUT THE READING AND LITERATURE ASSESSMENTS

Each assessment generates a tremendous amount of information. To make the data as useful as possible to a variety of audiences, National Assessment provides several types of publications.

Reports

Since it is difficult and time-consuming to synthesize many discrete bits of data, National Assessment prepares reports about the reading and literature assessments for the general public -- including parents, classroom teachers, school administrators and legislators -- that not only provide considerable data about each exercise but also synthesize and highlight assessment results.

Although National Assessment does not interpret assessment results, it recognizes that data presented alone are often difficult to consider in perspective. Accordingly, National Assessment asked a group of reading educators to review and comment upon the results; their comments are included in the reports summarizing the reading assessment results.

A report, Three National Assessments of Reading: Changes in Performance, 1970-80 (1981), concerning changes in reading performance across the three assessments is available.

Additional reports on responding to written works and performance on comprehension and study skills items by 9-, 13- and 17-year-old students are planned for publication during 1981-82.

The following reports describing results from the second assessment are also available:

Reading in America: A Perspective on Two Assessments (1976).

Reading Change, 1970-75: Summary Volume (1978).

Objectives

A description of the 1974-75 reading objectives and 1979-80 reading/literature objectives and the procedures used in developing the objectives are available in Reading Objectives, Second Assessment (1974) and Reading and Literature Objectives, 1979-80 Assessment (1980).

Exercises, Scoring Procedures and Data

For those wishing to use specific National Assessment items, NAEP provides copies of released items, exercise documentation and scoring guides as well as information on scoring procedures and exercise-level data on microfiche. Materials that are or will be available include:

Reading/Literature Released Exercise Set, 1979-80 Assessment (1981).

Reading/Literature Released Exercise Set, 1979-80 Assessment: Supplement (1981).

For those desiring additional exercises, the exercises released following the first assessment are available in Literature: Released Exercises (1973) and The First Assessment of Reading, 1970-71 Assessment, Released Exercise Set (1979).

Public-Use Data Tapes

For those who wish to perform their own analyses of National Assessment data, National Assessment will make available data tapes of respondent-level data for all reading and literature and reading/literature assessments. To protect the confidentiality of the respondents, all identifying information (school, district, state) has been deleted. The tapes include documentation of exercises and are organized and documented in such a way that they can be used with standard statistical packages.

User Services

National Assessment provides some assistance to those wishing to use assessment items or to replicate assessment methodology. Those interested in receiving assistance should contact the National Assessment office.

APPENDIX A

MEMBERS OF THE READING/LITERATURE ADVISORY COMMITTEE

Barksdale, Richard K., University of Illinois at Urbana

Beck, Isabel, Univerisity of Pittsburgh, Pennsylvania

Cooper, Charles R., University of California at San Diego

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Eller, Wil[illegible] State University of New York at Amherst

Fry, Edward, Rutgers University, New Brunswick, New Jersey

Jackson, Shirley, U.S. Office of Education, Washington, D.C.

Kaiser, Robert, Memphis State University, Tennessee

Kuchinskas, Gloria, Florida Department of Education

Maloney, Henry B., Seaholm High School, Birmingham Public Schools, Michigan

Petrosky, Anthony, University of Pittsburgh, Pennsylvania

Roller, Beverly, Jefferson County Public Schools, Colorado

Schreiner, Robert, University of Minnesota at Minneapolis

Strickland, Dorothy, Columbia University, New York

Venezky, Richard, University of Delaware at Newark

Yesner, Seymour, Public Schools of Brookline, Massachusetts

APPENDIX B

DEFINITIONS OF NATIONAL ASSESSMENT REPORTING GROUPS

In addition to reporting results for all 9-, 13- and 17-year-old students in the United States, National Assessment reports results for a number of population subgroups. Most of these subgroups are defined for both the reading and literature assessments.

Definitions of the subgroups follow:

Region

The country has been divided into four regions: Northeast, Southeast, Central and West. States included in each region are shown on the following map.

Sex

Results are reported for males and females.

Race/Ethnicity

Results are presented for blacks, whites and Hispanos (1979-80 only).

Level of Parental Education

National Assessment defines three categories of parental-education levels, based on students' reports. These categories are: (1) those whose parents did not graduate from high school, (2) those who have at least one parent who graduated from high school and (3) those who have at least one parent who has had some post-high-school education.

Type of Community

Three extreme community types of special interest are defined by an occupational profile of the area served by a school as well as by the size of the community in which the school is located.

Advantaged-urban (high-metro) communities. Students in this group attend schools in or around cities having a population greater than 200,000 where a high proportion of the residents are in professional or managerial positions.

Disadvantaged-urban (low-metro) communities. Students in this group attend schools in or around cities having a population greater than 200,000

where a relatively high proportion of the residents are on welfare or are not regularly employed.

Rural communities. Students in this group attend schools in areas with a population under 10,000 where many of the residents are farmers or farm workers.

This is the only reporting category that excludes a large number of respondents. About two-thirds do not fall into the classifications listed above. Results for the remaining two-thirds are not reported since their performance was similar to that of the nation.

Size of Community

Big cities. Students in this group attend schools within the city limits of cities having a 1970 census population over 200,000.

Fringes around big cities. Students in this group attend schools within metropolitan areas (1970 U.S. Bureau of the Census urbanized areas) served by cities having a population greater than 200,000 but outside the city limits.

Medium cities. Students in this group attend schools in cities having a population between 25,000 and 200,000, not classified in the fringes-around-big-cities category.

Small places. Students in this group attend schools in communities having a population less than 25,000, not classified in the fringes-around-big-cities category.

Grade in School

Results are categorized for 9-year-olds in the 3rd or 4th grade; 13-year-olds in the 7th or 8th grade; and 17-year-olds in the 10th, 11th or 12th grade.

Modal Grade by Region

Results are categorized for 9-, 13- and 17-year-old respondents in grades 4, 8 and 11, respectively, who live in the Northeastern, Southeastern, Central or Western region of the country.

Modal Grade by Community Size

Results are categorized for 9-, 13- and 17-year-old respondents in grades 4, 8 and 11, respectively, who live in big cities, fringes around big cities, medium cities and small places.

Modal Grade by Sex

Results are categorized for 9-, 13- and 17-year-old males and females in grades 4, 8 and 11, respectively.

Reading Enjoyment

Results are categorized for 9-, 13- and 17-year-old respondents who responded to a question concerning how much they enjoy reading. Possible responses are: do not enjoy it at all, enjoy it somewhat, enjoy it very much.

Kindergarten Attendance

Results are categorized for 9-year-olds only who responded either yes or no to a background question concerning kindergarten attendance.

Kind of Reader

Results are categorized for 9-, 13- and 17-year-old respondents by poor, good and very good readers. The categories were created from responses to a question asking the students whether they thought of themselves as poor, good or very good.

Reading Importance

Results are categorized for 9-, 13- and 17-year-old respondents by type of response to a background item relating to whether reading is very important, somewhat important or not at all important.

Reading Frequency

Results are categorized for 9-, 13- and 17-year-old respondents according to frequency of their reading for enjoyment. Possible responses are: almost daily, once or twice a week, less than once a week and never.

TV Viewing

Results are categorized for 9-, 13- and 17-year-old respondents by amount of time spent watching TV the previous day. Possible responses are: 1 hour or less, 1 to 2 hours, 3 to 4 hours, 5 or more hours.

Language

Results are categorized for 9-, 13- and 17-year-old respondents according to language use in the home. Possible responses are: English spoken most and other language seldom or never, English spoken most and other language often, English not most often spoken but other language used most often.

Spare-Time Reading

Results are categorized for 9-, 13- and 17-year-old respondents specifying either a preference for reading fiction or nonfiction, no preference or else stating that they never read during their spare time.

Time Spent Reading

Results are categorized for 9-, 13- and 17-year-old respondents by time spent reading for enjoyment the previous day, reported by time amounts of less than 1 hour, 1 to 2 hours, 3 or more hours.

Homework

Results are categorized for 13- and 17-year-olds according to responses concerning amount of time spent on homework the previous day. Possible responses are: none assigned, did not do any assigned homework, less than 1 hour, between 1 to 2 hours, more than 2 hours.

Achievement Class

Results are presented in four ranges of achievement performance.

Achievement class 1. The lowest one-fourth of the national sample.

Achievement class 2. The middle lowest one-fourth of the national sample.

Achievement class 3. The middle highest one-fourth of the national sample.

Achievement class 4. The highest one-fourth of the national sample.

APPENDIX C

FORMS USED TO OBTAIN BACKGROUND INFORMATION

This appendix contains the forms used by National Assessment to collect background information from school officials and respondents for the 1979-80 assessment. Following is a list and a brief description of the forms included.

p. 37 School Principal's Questionnaire — filled out by school principals or other school officials for schools at each of the age levels discussed.

p. 39 Supplementary Principal's Questionnaire — filled out by school officials to provide information about regular school reading/literature programs, remedial and enrichment courses, teacher support and school resources.

p. 50 Package Cover Sheet — cover of item booklet filled out by exercise administrators to provide information about the grade, sex, birth date and race of each student.

p. 51 Directions to Exercise Administrators for Coding Package Cover Sheet — tells exercise administrators how to code information in boxes 3-8 on package cover sheet. Directions shown are for 13-year-olds' booklets.

p. 52 Standard Background Information Form for 9-Year-Olds — provides information about reading material in the home and level of parents' education.

p. 53 Standard Background Information Form for 13-Year-Olds — provides information about reading material in the home, level of parents' education and place lived in at age 9.

p. 54 Standard Background Information Form for 17-Year-Olds — provides information on level of parents' education and place lived in at ages 9 and 13.

p. 55 Supplementary Background Information Form for 9-Year-Olds — provides information about TV watching, time spent reading, kindergarten attendance, English language usage and self perception as a reader.

p. 57 Supplementary Background Information Form for 13-Year-Olds -- provides information about homework, TV watching, time spent reading, English language usage and self-perception as a reader.

p. 59 Supplementary Background Information Form for 17-Year-Olds -- provides information about racial and ethnic identification, possessions in the home and primary emphasis of high school courses, in addition to questions asked of 13-year-olds.

p. 62 Reading Background Questionnaire for 17-Year-Olds Out of School -- provides information about current employment and frequency of reading tasks in job situations.

School Principal's Questionnaire

This report is authorized by law (20 U.S.C. 1221 c-1). While you are not required to respond, your cooperation is needed to make the results of this survey comprehensive, accurate, and timely.

Primary Sampling Unit [ ][ ] School Number [ ][ ][ ][ ][ ][ ][ ][ ][ ]

Age Group(s) 9 13 17

PLEASE PRINT

Name of School _____

Address of School _____
(Street)

_____
(City) (State) (Zip Code)

Name of School Principal _____

Name and title of person completing the form if other than school principal

Name _____ Title _____

1. What is your best estimate of the current enrollment and the average daily attendance by grade of your school (1979-80 school year)? (Enter zeros for grades not served by your school.)

Grade	K	1	2	3	4	5	6	7	8	9	10	11	12
Enrollment													
Average Daily Attendance													

2. Approximately what percentage of the students attending your school live in each of the following areas?

_____% A In a rural area (less than 2,500)

_____% B In a town of 2,500 to 10,000

_____% C In a town of 10,000 or more

_____ (Items A-C should add to 100%)
100%

3. Approximately what percentage of the students attending your school are children of

_____% A Professional or managerial personnel

_____% B Sales, clerical, technical or skilled workers

_____% C Factory or other blue collar workers

_____% D Farm workers

_____% E Persons not regularly employed

_____% F Persons on welfare

_____ (Items A-F should add to 100%)
100%

4. Approximately what percentage of the students attending your school are

_____% A American Indian or Alaskan Native

_____% B Asian or Pacific Islander

_____% C Hispanic, regardless of race (Mexican, Puerto Rican, Cuban, Central or South American or other Spanish culture or origin)

_____% D Black and not Hispanic

_____% E White and not Hispanic

_____ (Items A-E should add to 100%)
100%

5. Does your school qualify for ESEA Title I assistance?

_____ Yes - If Yes, approximately what number of students qualify for and what number of students are receiving ESEA Title I assistance?

_____ Approximate number of students qualifying for ESEA Title I assistance

_____ Approximate number of students receiving ESEA Title I assistance

_____ No

THANK YOU FOR YOUR COOPERATION

Supplementary Principal's Questionnaire for 9- and 13-Year-Olds

Instructions: The purpose of this questionnaire is to provide additional information which will be used in the analysis of the Reading/Literature data. Please answer the following questions for each school grade listed. Darken the appropriate ovals with a soft lead pencil. If you have questions about any of the following items, please contact the National Assessment District Supervisor. Thank you for your cooperation.

1. Does your school have a school library?

   ⬭ Yes (Go to Question 2 on page 2.)

   ⬭ No (Go to Question 4 on page 3.)

2. If your school has a library, approximately how many volumes are housed in it?_____

3. If your school has a library, when are your library facilities available for the use of students?

A.	Before school hours	⬭ Yes	⬭ No
B.	During school hours	⬭ Yes	⬭ No
C.	After school hours — afternoon	⬭ Yes	⬭ No
D.	After school hours — night	⬭ Yes	⬭ No
E.	Weekends	⬭ Yes	⬭ No

4. Whether or not your school has a library, are any [illegible]ing sources of reading materials available to students in your school?

A.	Individual classroom collections of reading materials	⬭ Yes	⬭ No
B.	Bookmobile	⬭ Yes	⬭ No
C.	Cooperative programs with libraries outside the school	⬭ Yes	⬭ No
D.	Book clubs	⬭ Yes	⬭ No
E.	Book store or book trading post	⬭ Yes	⬭ No
F.	Books donated by individuals or parent organizations	⬭ Yes	⬭ No
G.	Students' personal book collections	⬭ Yes	⬭ No
H.	Other Please specify: _____	⬭ Yes	⬭ No
I.	Other Please specify: _____	⬭ Yes	⬭ No

5. Are any of the following instructional methods or materials available to help students in your school read better?

A.	Individualized reading materials	⬭ Yes	⬭ No
B.	Audio-visual aids (e.g., tape recordings, film strips)	⬭ Yes	⬭ No
C.	Computer-assisted instruction	⬭ Yes	⬭ No
D.	Teaching machines (e.g., controlled reader, tachistoscope)	⬭ Yes	⬭ No
E.	Skill exercises or worksheets (e.g., vocabulary, comprehension, study skills)	⬭ Yes	⬭ No
F.	Reading games, either commercial or teacher-made	⬭ Yes	⬭ No
G.	High interest/low vocabulary level reading materials	⬭ Yes	⬭ No
H.	Other Please specify: _____	⬭ Yes	⬭ No
I.	Other Please specify: _____	⬭ Yes	⬭ No

6. Approximately what percentage of your entire teaching staff (including teachers in areas such as art, music, physical education, etc.) have received in-service training in reading from your school or district?

- ⬭ In-service training not offered
- ⬭ 1-9% received training
- ⬭ 10-24% received training
- ⬭ 25-49% received training
- ⬭ 50-99% received training
- ⬭ 100% received training

7. Does your school provide separate classes in remedial reading (i.e., a "pull-out" program in contrast to additional assistance in the regular classroom setting)?

- ⬭ Yes (Go to Question 8 on page 6.)
- ⬭ No (Go to Question 11 on page 8.)

8. If separate remedial reading classes are offered, approximately what percentage of your students enrolled in the following grades participate in these classes?

	No such grade	0%	1-9%	10-24%	25-49%	50-99%	100%
A. Grade 1	⬭	⬭	⬭	⬭	⬭	⬭	⬭
B. Grade 2	⬭	⬭	⬭	⬭	⬭	⬭	⬭
C. Grade 3	⬭	⬭	⬭	⬭	⬭	⬭	⬭
D. Grade 4	⬭	⬭	⬭	⬭	⬭	⬭	⬭
E. Grade 5	⬭	⬭	⬭	⬭	⬭	⬭	⬭
F. Grade 6	⬭	⬭	⬭	⬭	⬭	⬭	⬭
G. Grade 7	⬭	⬭	⬭	⬭	⬭	⬭	⬭
H. Grade 8	⬭	⬭	⬭	⬭	⬭	⬭	⬭
I. Grade 9	⬭	⬭	⬭	⬭	⬭	⬭	⬭
J. Ungraded	⬭	⬭	⬭	⬭	⬭	⬭	⬭

9. If separate remedial reading classes are offered, do any of the following persons teach or assist with these classes?

A.	Certified reading teacher or specialist	⬭ Yes	⬭ No
B.	Classroom teacher with no special certification in reading	⬭ Yes	⬭ No
C.	Paraprofessional or paid reading aide	⬭ Yes	⬭ No
D.	Other Please specify: _____ _____	⬭ Yes	⬭ No
E	Other Please specify: _____ _____	⬭ Yes	⬭ No

10. If separate remedial reading classes are offered, how frequently are the following methods used to identify students for these classes?

		Always	Often	Sometimes	Never
A.	Group-administered standardized reading tests	⬭	⬭	⬭	⬭
B.	Individually-administered reading tests	⬭	⬭	⬭	⬭
C.	Teacher referral	⬭	⬭	⬭	⬭
D.	Counselor referral	⬭	⬭	⬭	⬭
E.	Parent request	⬭	⬭	⬭	⬭
F.	Self referral	⬭	⬭	⬭	⬭
G.	Other Please specify: _____ _____	⬭	⬭	⬭	⬭
H.	Other Please specify: _____ _____	⬭	⬭	⬭	⬭

11. Does your school offer <u>separate</u> enrichment reading classes designed to improve reading skills of good readers?

- ⬭ Yes (Go to Question 12.)
- ⬭ No (Stop. Do not answer Question 12.)

12. If <u>separate</u> enrichment reading classes are offered, approximately what percentage of your students enrolled in the following grades participate in these classes?

	No such grade	0%	1-9%	10-24%	25-49%	50-99%	100%
A. Grade 1	⬭	⬭	⬭	⬭	⬭	⬭	⬭
B. Grade 2	⬭	⬭	⬭	⬭	⬭	⬭	⬭
C. Grade 3	⬭	⬭	⬭	⬭	⬭	⬭	⬭
D. Grade 4	⬭	⬭	⬭	⬭	⬭	⬭	⬭
E. Grade 5	⬭	⬭	⬭	⬭	⬭	⬭	⬭
F. Grade 6	⬭	⬭	⬭	⬭	⬭	⬭	⬭
G. Grade 7	⬭	⬭	⬭	⬭	⬭	⬭	⬭
H. Grade 8	⬭	⬭	⬭	⬭	⬭	⬭	⬭
I. Grade 9	⬭	⬭	⬭	⬭	⬭	⬭	⬭
J. Ungraded	⬭	⬭	⬭	⬭	⬭	⬭	⬭

THANK YOU FOR YOUR COOPERATION.

Supplementary Principal's Questionnaire for 17-Year-Olds

Instructions: The purpose of this questionnaire is to provide additional information which will be used in the analysis of the Reading/Literature data. Please answer the following questions for each school grade listed. Darken the appropriate ovals with a soft lead pencil. If you have questions about any of the following items, please contact the National Assessment District Supervisor. Thank you for your cooperation.

1. Does your school have a school library?

   ⬭ Yes (Go to Question 2 on page 2.)

   ⬭ No (Go to Question 4 on page 3.)

2. If your school has a library, approximately how many volumes are housed in it?_____

3. If your school has a library, when are your library facilities available for the use of students?

A.	Before school hours	⬭ Yes	⬭ No
B.	During school hours	⬭ Yes	⬭ No
C.	After school hours — afternoon	⬭ Yes	⬭ No
D.	After school hours — night	⬭ Yes	⬭ No
E.	Weekends	⬭ Yes	⬭ No

4. Whether or not your school has a library, are any of the following sources of reading materials available to students in your school?

A.	Individual classroom collections of reading materials	⬭ Yes	⬭ No
B.	Bookmobile	⬭ Yes	⬭ No
C.	Cooperative programs with libraries outside the school	⬭ Yes	⬭ No
D.	Book clubs	⬭ Yes	⬭ No
E.	Book store or book trading post	⬭ Yes	⬭ No
F.	Books donated by individuals or parent organizations	⬭ Yes	⬭ No
G.	Students' personal book collections	⬭ Yes	⬭ No
H.	Other Please specify: _____	⬭ Yes	⬭ No
I.	Other Please specify: _____	⬭ Yes	⬭ No

5. Are any of the following instructional methods or materials available to help students in your school read better?

A.	Individualized reading materials	⬭ Yes	⬭ No
B.	Audio-visual aids (e.g., tape recordings, film strips)	⬭ Yes	⬭ No
C.	Computer-assisted instruction	⬭ Yes	⬭ No
D.	Teaching machines (e.g., controlled reader, tachistoscope)	⬭ Yes	⬭ No
E.	Skill exercises or worksheets (e.g., vocabulary, comprehension, study skills)	⬭ Yes	⬭ No
F.	Reading games, either commercial or teacher-made	⬭ Yes	⬭ No
G.	High interest/low vocabulary level reading materials	⬭ Yes	⬭ No
H.	Other Please specify: _____	⬭ Yes	⬭ No
I.	Other Please specify: _____	⬭ Yes	⬭ No

6. Approximately what percentage of your entire teaching staff (including teachers in areas such as art, music, physical education, etc.) have received in-service training in reading from your school or district?

- ⬭ In-service training not offered
- ⬭ 1-9% received training
- ⬭ 10-24% received training
- ⬭ 25-49% received training
- ⬭ 50-99% received training
- ⬭ 100% received training

7. How many semesters (approximately 18 weeks) of English instruction are required in each of the following grades in your school? If your school is organized by quarters (approximately 9 weeks), please convert your answer to semesters (1 quarter = ½ semester).

	No such grade	½ Semester	1 Semester	1½ Semesters	2 Semesters
A. Grade 9	⬭	⬭	⬭	⬭	⬭
B. Grade 10	⬭	⬭	⬭	⬭	⬭
C. Grade 11	⬭	⬭	⬭	⬭	⬭
D. Grade 12	⬭	⬭	⬭	⬭	⬭

8. How are the following topics included in your school's English or Reading curriculum? Fill in only one oval for each topic. If a topic is both a unit of study and integrated into a general English course, fill in the oval under "concentrated unit of study".

		As a concentrated unit of study of 9 weeks or more	As a topic integrated into a general English course	Not at all
A.	Literature (by historical period)	⬭	⬭	⬭
B.	Literature (by genre or interest grouping)	⬭	⬭	⬭
C.	Study about language (e.g., semantics, history of language)	⬭	⬭	⬭
D.	Humanities (interdisciplinary studies including literature and other subjects)	⬭	⬭	⬭
E.	Composition	⬭	⬭	⬭
F.	Creative writing	⬭	⬭	⬭
G.	Speech	⬭	⬭	⬭
H.	Debate	⬭	⬭	⬭
I.	Theater	⬭	⬭	⬭
J.	Journalism	⬭	⬭	⬭
K.	Mass media (radio, film, TV)	⬭	⬭	⬭
L.	Study skills	⬭	⬭	⬭
M.	Vocabulary development	⬭	⬭	⬭
N.	Grammar	⬭	⬭	⬭
O.	Other Please specify: _____ _____	⬭	⬭	⬭
P.	Other Please specify: _____ _____	⬭	⬭	⬭

9. Does your school offer an "honors" program or advanced placement in English?

⬭ Yes

⬭ No

10. Does your school provide separate classes in remedial reading (i.e., a "pull-out" program in contrast to additional assistance in the regular classroom setting)?

- ⬭ Yes (Go to Question 11.)
- ⬭ No (Go to Question 14 on page 10.)

11. If separate remedial reading classes are offered, approximately what percentage of your students enrolled in the following grades participate in these classes?

	No such grade	0%	1-9%	10-24%	25-49%	50-99%	100%
A. Grade 9	⬭	⬭	⬭	⬭	⬭	⬭	⬭
B. Grade 10	⬭	⬭	⬭	⬭	⬭	⬭	⬭
C. Grade 11	⬭	⬭	⬭	⬭	⬭	⬭	⬭
D. Grade 12	⬭	⬭	⬭	⬭	⬭	⬭	⬭

12. If separate remedial reading classes are offered, do any of the following persons teach or assist with these classes?

A.	Certified reading teacher or specialist	⬭ Yes	⬭ No
B.	Classroom teacher with no special certification in reading	⬭ Yes	⬭ No
C.	Paraprofessional or paid reading aide	⬭ Yes	⬭ No
D.	Other Please specify: _____ _____	⬭ Yes	⬭ No
E.	Other Please specify: _____ _____	⬭ Yes	⬭ No

13. If separate remedial reading classes are offered, how frequently are the following methods used to identify students for these classes?

		Always	Often	Sometimes	Never
A.	Group-administered standardized reading tests	⬭	⬭	⬭	⬭
B.	Individually-administered reading tests	⬭	⬭	⬭	⬭
C.	Teacher referral	⬭	⬭	⬭	⬭
D.	Counselor referral	⬭	⬭	⬭	⬭
E.	Parent request	⬭	⬭	⬭	⬭
F.	Self referral	⬭	⬭	⬭	⬭
G.	Other Please specify: _____	⬭	⬭	⬭	⬭
H.	Other Please specify: _____	⬭	⬭	⬭	⬭

14. Does your school offer separate enrichment reading classes designed to improve reading skills of good readers?

⬭ Yes (Go to Question 15.)

⬭ No (Stop. Do not answer Question 15.)

15. If separate enrichment reading classes are offered, approximately what percentage of your students enrolled in the following grades participate in these classes?

		No such grade	0%	1-9%	10-24%	25-49%	50-99%	100%
A.	Grade 9	⬭	⬭	⬭	⬭	⬭	⬭	⬭
B.	Grade 10	⬭	⬭	⬭	⬭	⬭	⬭	⬭
C.	Grade 11	⬭	⬭	⬭	⬭	⬭	⬭	⬭
D.	Grade 12	⬭	⬭	⬭	⬭	⬭	⬭	⬭

THANK YOU FOR YOUR COOPERATION

O.M.B. No. 051-R1204
Approval Expires 9-30-81
FEDAC No. R34
Approval Expires 12-81

PACKAGE NO. 7

NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS
A PROJECT OF THE EDUCATION COMMISSION OF THE STATES

This report is authorized by law (20 U.S.C. 1221 e-1). While you are not required to respond, your cooperation is needed to make the results of this survey comprehensive, accurate and timely.

PACKAGE NUMBER	
0	2

I. D. NUMBER			

3	4	5	6	7	8

- N
- P
- NR
- NE
- H

* Grade 2 or lower

** Grade 6 or higher

YEAR 11
AGE CLASS 1
GROUP

NIE Form Nos. 2371-9, 66, 69

Directions to Exercise Administrators for Coding Package Cover Sheet

Codes To Be Used in Columns 3-8

Package Coding Column	Administration Schedule Column	Item	Code
3	3	Grade	Two digits: 8th grade = 08 Ungraded class = 98 Special education class = 99
4	4	Sex	1 = Male 2 = Female
5	5	Birthdate	Month and last two digits of year: May 1966 = 0566
6	6	Race	1 = W(White) 2 = B(Black) 3 = S(Spanish Heritage) 4 = I(American Indian or Alaskan Native) 5 = A(Asian or Pacific Islander) 6 = U(Unclassified)
7	--	EA Number	Two digits; number recorded on the front cover of your manual
8	--	PSU and School Numbers	Five digits; First two = PSU Number; Last three = School Number; as shown on the Administration Schedule

Standard Background Information Form for 9-Year-Olds

1. Does your family get a newspaper regularly?

   ⬭ Yes ⬭ No ⬭ I don't know.

2. Does your family get any magazines regularly?

   ⬭ Yes ⬭ No ⬭ I don't know.

3. Are there more than 25 books in your home?

   ⬭ Yes ⬭ No ⬭ I don't know.

4. Is there an encyclopedia in your home?

   ⬭ Yes ⬭ No ⬭ I don't know.

5. How much school did your father complete?
   (FILL IN THE ONE OVAL which best shows how much school your father completed.)

   ⬭ Did not complete the 8th grade

   ⬭ Completed the 8th grade, but did not go to high school

   ⬭ Went to high school, but did not graduate from high school

   ⬭ Graduated from high school

   ⬭ Some education after graduation from high school

   ⬭ I don't know.

6. Did your father graduate from a college or university?

   ⬭ Yes ⬭ No ⬭ I don't know.

7. How much school did your mother complete?
   (FILL IN THE ONE OVAL which best shows how much school your mother completed.)

   ⬭ Did not complete the 8th grade

   ⬭ Completed the 8th grade, but did not go to high school

   ⬭ Went to high school, but did not graduate from high school

   ⬭ Graduated from high school

   ⬭ Some education after graduation from high school

   ⬭ I don't know.

8. Did your mother graduate from a college or university?

   ⬭ Yes ⬭ No ⬭ I don't know.

1. Does your family get a newspaper regularly?

   ⬭ Yes ⬭ No ⬭ I don't know.

2. Does your family get any magazines regularly?

   ⬭ Yes ⬭ No ⬭ I don't know.

3. Are there more than 25 books in your home?

   ⬭ Yes ⬭ No ⬭ I don't know.

4. Is there an encyclopedia in your home?

   ⬭ Yes ⬭ No ⬭ I don't know.

5. How much school did your father complete?
   (FILL IN THE ONE OVAL which best shows how much school your father completed.)
   - ⬭ Did not complete the 8th grade
   - ⬭ Completed the 8th grade, but did not go to high school
   - ⬭ Went to high school, but did not graduate from high school
   - ⬭ Graduated from high school
   - ⬭ Some education after graduation from high school

   ⬭ I don't know.

6. Did your father graduate from a college or university?

   ⬭ Yes ⬭ No ⬭ I don't know.

7. How much school did your mother complete?
   (FILL IN THE ONE OVAL which best shows how much school your mother completed.)
   - ⬭ Did not complete the 8th grade
   - ⬭ Completed the 8th grade, but did not go to high school
   - ⬭ Went to high school, but did not graduate from high school
   - ⬭ Graduated from high school
   - ⬭ Some education after graduation from high school

   ⬭ I don't know.

8. Did your mother graduate from a college or university?

   ⬭ Yes ⬭ No ⬭ I don't know.

9. Where did you live on your ninth birthday?
   - ⬭ In the United States (Please specify the state or territory.)

     _____

   - ⬭ Outside the United States (Please specify the country.)

     _____

   ⬭ I don't know.

1. How much school did your father complete?
(FILL IN THE ONE OVAL which best shows how much school your father completed.)
   - ⬭ Did not complete the 8th grade
   - ⬭ Completed the 8th grade, but did not go to high school
   - ⬭ Went to high school, but did not graduate from high school
   - ⬭ Graduated from high school
   - ⬭ Some education after graduation from high school
   - ⬭ I don't know.

2. Did your father graduate from a college or university?
   - ⬭ Yes ⬭ No ⬭ I don't know.

3. How much school did your mother complete?
(FILL IN THE ONE OVAL which best shows how much school your mother completed.)
   - ⬭ Did not complete the 8th grade
   - ⬭ Completed the 8th grade, but did not go to high school
   - ⬭ Went to high school, but did not graduate from high school
   - ⬭ Graduated from high school
   - ⬭ Some education after graduation from high school
   - ⬭ I don't know.

4. Did your mother graduate from a college or university?
   - ⬭ Yes ⬭ No ⬭ I don't know.

5. Where did you live on your ninth birthday?
   - ⬭ In the United States (Please specify the state or territory.)
     _____
   - ⬭ Outside of the United States (Please specify the country.)
     _____
   - ⬭ I don't know.

6. Where did you live on your thirteenth birthday?
   - ⬭ In the United States (Please specify the state or territory.)
     _____
   - ⬭ Outside of the United States (Please specify the country.)
     _____
   - ⬭ I don't know.

Supplementary Background Information Form for 9-Year-Olds

1. A. How important is it to be able to read?

- ⬭ It is very important.
- ⬭ It is somewhat important.
- ⬭ It is not important at all.

B. How much do you enjoy reading?

- ⬭ I enjoy it very much.
- ⬭ I enjoy it somewhat.
- ⬭ I do not enjoy it at all.

2. What kind of reader do you think you are for your age?

- ⬭ A poor reader
- ⬭ A good reader
- ⬭ A very good reader

- ⬭ I don't know.

23. A. How much television did you watch yesterday?

- ⬭ None
- ⬭ 1 hour or less
- ⬭ 1 hour
- ⬭ 2 hours
- ⬭ 3 hours
- ⬭ 4 hours
- ⬭ 5 hours
- ⬭ 6 hours or more

B. How much time did you spend reading just for your own enjoyment yesterday?

- ⬭ None
- ⬭ 1 hour or less
- ⬭ 1 hour
- ⬭ 2 hours
- ⬭ 3 hours
- ⬭ 4 hours
- ⬭ 5 hours
- ⬭ 6 hours or more

C. Did you go to kindergarten before you attended first grade?

- ⬭ Yes
- ⬭ No

D. Is English the language spoken most often in your home?

- ⬭ Yes
- ⬭ No

E. Is a language other than English spoken in your home?

- ⬭ Often
- ⬭ Sometimes
- ⬭ Never

1. A. How important is it to be able to read?

- ⬭ It is very important.
- ⬭ It is somewhat important.
- ⬭ It is not important at all.

B. How much do you enjoy reading?

- ⬭ I enjoy it very much.
- ⬭ I enjoy it somewhat.
- ⬭ I do not enjoy it at all.

22. What kind of reader do you think you are for your age?

- ⬭ A poor reader
- ⬭ A good reader
- ⬭ A very good reader

- ⬭ I don't know.

24. A. How much time did you spend on homework yesterday?

- ⬭ No homework was assigned.
- ⬭ I had homework but didn't do it.
- ⬭ Less than one hour
- ⬭ Between 1 and 2 hours
- ⬭ More than 2 hours

B. How much television did you watch yesterday?

⬭ None	⬭ 2 hours	⬭ 5 hours
⬭ 1 hour or less	⬭ 3 hours	⬭ 6 hours or more
⬭ 1 hour	⬭ 4 hours	

C. How much time did you spend reading just for your own enjoyment yesterday?

⬭ None	⬭ 2 hours	⬭ 5 hours
⬭ 1 hour or less	⬭ 3 hours	⬭ 6 hours or more
⬭ 1 hour	⬭ 4 hours	

D. Is English the language spoken most often in your home?

- ⬭ Yes
- ⬭ No

E. Is a language other than English spoken in your home?

- ⬭ Often
- ⬭ Sometimes
- ⬭ Never

22. A. How important is it to be able to read?

- ⬭ It is very important.
- ⬭ It is somewhat important.
- ⬭ It is not important at all.

B. How much do you enjoy reading?

- ⬭ I enjoy it very much.
- ⬭ I enjoy it somewhat.
- ⬭ I do not enjoy it at all.

23. A. What kind of reader do you think you are for your age?

- ⬭ A poor reader
- ⬭ A good reader
- ⬭ A very good reader

- ⬭ I don't know.

B. How would you classify the primary emphasis of your high school courses?

- ⬭ General only
- ⬭ Vocational, technical, or trade
- ⬭ College preparatory

- ⬭ I don't know.

10. A. How much time did you spend on homework yesterday?

- ⬭ No homework was assigned.
- ⬭ I had homework but didn't do it.
- ⬭ Less than one hour
- ⬭ Between 1 and 2 hours
- ⬭ More than 2 hours

B. How much television did you watch yesterday?

⬭ None	⬭ 2 hours	⬭ 5 hours
⬭ 1 hour or less	⬭ 3 hours	⬭ 6 hours or more
⬭ 1 hour	⬭ 4 hours	

C. How much time did you spend reading just for your own enjoyment yesterday?

⬭ None	⬭ 2 hours	⬭ 5 hours
⬭ 1 hour or less	⬭ 3 hours	⬭ 6 hours or more
⬭ 1 hour	⬭ 4 hours	

D. Is English the language spoken most often in your home?

- ⬭ Yes
- ⬭ No

E. Is a language other than English spoken in your home?

- ⬭ Often
- ⬭ Sometimes
- ⬭ Never

11. What is your racial background?

- ⬭ American Indian or Alaskan Native
- ⬭ Asian or Pacific Islander
- ⬭ Black
- ⬭ White
- ⬭ Other (Please specify) _____

12. Is your ethnic heritage Hispanic (such as Mexican, Puerto Rican, Cuban, Central or South American or other Spanish Culture or origin)?

- ⬭ Yes
- ⬭ No

13. Which of the following does your family have at home? (Fill in one oval on each line.)

		Have	Do not have
A.	Newspaper received regularly	⬭	⬭
B.	Magazines received regularly	⬭	⬭
C.	More than 25 books	⬭	⬭
D.	Encyclopedia	⬭	⬭
E.	Dictionary	⬭	⬭
F.	Record player	⬭	⬭
G.	Tape recorder or cassette player	⬭	⬭
H.	Typewriter	⬭	⬭
I.	Vacuum cleaner	⬭	⬭
J.	Electric dishwasher	⬭	⬭
K.	Two or more cars or trucks that run	⬭	⬭

Reading Background Questionnaire for 17-Year-Olds Out of School

1. A. In high school, did you learn the kinds of skills you now need in your everyday life?

   ⬭ Yes

   ⬭ No

   B. If no, what skills do you think you should have learned in school?

   _____

   _____

   _____

   _____

   _____

   _____

2. Are you now employed?

   ⬭ Yes, full-time (Go to Question 3 on page 4.)

   ⬭ Yes, part-time (Go to Question 3 on page 4.)

   ⬭ No (Go to Question 6 on page 5.)

3. If you are now employed full-time or part-time, how often do you use the following reference sources for your job?

		At least once a day	At least once a week	Less than once a week	Never
A.	Telephone directories	⬭	⬭	⬭	⬭
B.	Catalogs	⬭	⬭	⬭	⬭
C.	Dictionaries	⬭	⬭	⬭	⬭
D.	Technical references (such as manuals on how to operate and maintain equipment, other "How-to-Do" guides)	⬭	⬭	⬭	⬭

4. If you are now employed full-time or part-time, how often do you read the following types of materials for your job?

		At least once a day	At least once a week	Less than once a week	Never
A.	Notes, letters, or memos	⬭	⬭	⬭	⬭
B.	Forms (such as work orders, job orders, vouchers, claims, or purchase orders)	⬭	⬭	⬭	⬭
C.	Charts, graphs, maps, or tables	⬭	⬭	⬭	⬭
D.	Manuals on company rules, policies, and procedures	⬭	⬭	⬭	⬭

5. If you are now employed full-time or part-time, how often do you have problems doing the reading required for your job?

- ⬭ Often
- ⬭ Sometimes
- ⬭ Never

6. A. Are you now enrolled in a school or training program?

- ⬭ Yes, on a full-time basis (Go to Question 6B. below.)
- ⬭ Yes, on a part-time basis (Go to Question 6B. below.)
- ⬭ No (Go to Question 7 on page 6.)

B. If yes, in what type of program are you enrolled?

- ⬭ Primarily academic
- ⬭ Primarily vocational or technical
- ⬭ Other: _____

7. Look at the occupational categories shown on the next page. They are numbered 1 through 19. Choose the number of the ONE occupational category that best describes your main job and then fill in the oval beside the number you have chosen.

- ⬭ 1
- ⬭ 2
- ⬭ 3
- ⬭ 4
- ⬭ 5
- ⬭ 6
- ⬭ 7
- ⬭ 8
- ⬭ 9
- ⬭ 10
- ⬭ 11
- ⬭ 12
- ⬭ 13
- ⬭ 14
- ⬭ 15
- ⬭ 16
- ⬭ 17
- ⬭ 18
- ⬭ 19 - Other (Please describe.)

_____

_____

_____

_____

⬭ I don't know.

OCCUPATIONAL CATEGORIES

1 = APPRENTICE - such as apprentice bricklayer, carpenter, mechanic, plumber .....

2 = CLERICAL - such as bank teller, bookkeeper, secretary, typist, mail carrier, ticket agent .....

3 = CRAFTER - such as baker, automobile mechanic, machinist, painter, plumber, telephone installer, carpenter .....

4 = FARMER, FARM MANAGER .....

5 = FARM LABORER AND FOREMAN or FOREWOMAN .....

6 = HOMEMAKER .....

7 = LABORER - such as car washer, lumber millworker, sanitation worker, fisher .....

8 = MANAGER, ADMINISTRATOR - such as sales manager, office manager, school administrator, buyer, restaurant manager, government official .....

9 = MILITARY - such as career officer, enlisted man or woman in the armed forces .....

10 = OPERATIVE - such as meat cutter, assembler, machine operator, welder, taxicab, bus, or truck driver, gas station attendant .....

11 = PROFESSIONAL - such as accountant, artist, clergy, dentist, physician, registered nurse, engineer, lawyer, librarian, teacher, writer, scientist, social worker, actor or actress .....

12 = PROPRIETOR OR OWNER - such as owner of a small business, contractor, restaurant owner .....

13 = PROTECTIVE SERVICE - such as detective, police officer or guard, sheriff, firefighter .....

14 = SALES - such as sales worker, sales clerk, advertising or insurance agent, real estate broker .....

15 = SERVICE - such as barber, beautician, practical nurse, private household worker, janitor, waiter or waitress .....

16 = TECHNICAL - such as drafter, medical or dental technician, computer programmer ...

17 = STUDENT .....

18 = UNEMPLOYED .....

19 = OTHER .....

8. A. How important is it to be able to read?

- ⬭ It is very important.
- ⬭ It is somewhat important.
- ⬭ It is not important at all.

B. How much do you enjoy reading?

- ⬭ I enjoy it very much.
- ⬭ I enjoy it somewhat.
- ⬭ I do not enjoy it at all.

9. A. What kind of reader do you think you are for your age?

- ⬭ A poor reader
- ⬭ A good reader
- ⬭ A very good reader
- ⬭ I don't know.

B. How would you classify the primary emphasis of your high school courses?

- ⬭ General only
- ⬭ Vocational, technical, or trade
- ⬭ College preparatory
- ⬭ I don't know.

10. A. How often do you read for your own enjoyment during your spare time?

- ⬭ Almost every day
- ⬭ Once or twice a week
- ⬭ Less than once a week
- ⬭ Never

B. Which one of the following statements best describes the kind of reading you do in your spare time?

- ⬭ I never read during my spare time.
- ⬭ I mostly read fiction; for instance, short stories, novels and plays.
- ⬭ I mostly read nonfiction; for instance, books and articles about famous people, places, history, current events and hobbies.
- ⬭ I read fiction and nonfiction about equally.

11. A. How much television did you watch yesterday?

⬭ None	⬭ 2 hours	⬭ 5 hours
⬭ 1 hour or less	⬭ 3 hours	⬭ 6 hours or more
⬭ 1 hour	⬭ 4 hours	

B. How much time did you spend reading just for your own enjoyment yesterday?

⬭ None	⬭ 2 hours	⬭ 5 hours
⬭ 1 hour or less	⬭ 3 hours	⬭ 6 hours or more
⬭ 1 hour	⬭ 4 hours	

C. Is English the language spoken most often in your home?

- ⬭ Yes
- ⬭ No

D. Is a language other than English spoken in your home?

- ⬭ Often
- ⬭ Sometimes
- ⬭ Never

12. What is your racial background?

- ⬭ American Indian or Alaskan Native
- ⬭ Asian or Pacific Islander
- ⬭ Black
- ⬭ White
- ⬭ Other (Please specify) _____

13. Is your ethnic heritage Hispanic (such as Mexican, Puerto Rican, Cuban, Central or South American or other Spanish Culture or origin)?

- ⬭ Yes
- ⬭ No

14. Which of the following does your family have at home? (Fill in one oval on each line.)

		Have	Do not have
A.	Newspaper received regularly	⬭	⬭
B.	Magazines received regularly	⬭	⬭
C.	More than 25 books	⬭	⬭
D.	Encyclopedia	⬭	⬭
E.	Dictionary	⬭	⬭
F.	Record player	⬭	⬭
G.	Tape recorder or cassette player	⬭	⬭
H.	Typewriter	⬭	⬭
I.	Vacuum cleaner	⬭	⬭
J.	Electric dishwasher	⬭	⬭
K.	Two or more cars or trucks that run	⬭	⬭

APPENDIX D

RESPONSE RATES FOR ASSESSMENT SAMPLES

Table D-1 shows the response rates for students assessed in 1970-71, 1974-75 and 1979-80. In the 1970-71 and 1974-75 assessments, for each of the three age groups, 12 students and 4 alternates were selected for each assessment session. If all 12 students appeared for the session, then the alternates were dismissed. Otherwise, enough alternates were selected to bring the size of the group up to, or as near as possible to, 12. If the group assessed numbered between 8 and 12 students, then the administra-

TABLE D-1. Number of Students Assessed for Reading/Literature and Percent of Sample Covered, by Age and Assessment Year

Year	Age	Type of Administration	Number of Packages+	Total Number of Students Assessed	Average Number Assessed Per Package	Average Sample Covered in Percent
1970-71	9	G	9	23,220	2,580	90.7
		I	3	6,612	2,204	91.8
	13	G	13	33,202	2,554	88.2
		I	2	4,396	2,198	89.6
	17	G	10	23,727	2,373	75.2
		I	2	4,319	2,160	76.0
1974-75#	9	G	3	21,697	7,232	87.5
	13	G	3	21,393	7,131	83.7
	17	G	3	19,624	6,541	69.7
1979-80	9	G	11	29,103	2,646	90.1
	13	G	15	41,574	2,772	86.0
	17	G	14	36,109	2,579	77.3

+In the 1970-71 assessment, some booklets were administered to individual students using an interview (I) mode. The other booklets were administered to groups (G) of students.
#In the 1974-75 assessment, each booklet was triple sampled to increase the effective sample size. There were other booklets for other content areas also assessed in 1974-75; these are not included in this table.

tion was considered complete. If the final total was not at least a quorum of 8, a second and sometimes a third make-up session was held. The percentages in Table D-1 are based on the numbers of students assessed from the original groups of 12 selected and do not reflect the use of alternates.

For the 1979-80 assessment, slightly different procedures were used. The number of students selected for each administrative session varied from 16-25 students depending on the number of eligible students and the previous response rates obtained from schools in similar communities. No alternates were selected. The quorum size needed to consider an administrative session complete varied according to the number of students selected. Since nonresponse rates have always been relatively small for ages 9 and 13, the make-up or follow-up procedures used in 1979-80 for these ages were similar to the ones used for the 1970-71 assessment. If a quorum was not obtained at the first administrative session, a second and sometimes a third make-up session was held. At age 17, in the 1979-80 assessment, follow-up procedures were conducted on a school, rather than a session, basis. If a school had an overall response rate of less than 75%, then all nonrespondents in the school were contacted for one or two follow-up sessions. These follow-up procedures for 17-year-olds provided sample coverage similar to that obtained at ages 9 and 13.

Since response rates at age 17 have always been somewhat lower than at the other two ages, the Research Triangle Institute (RTI), Raleigh, North Carolina, was asked to conduct a special study of nonrespondents during the 1972-73 assessment of science and mathematics. The results (Kalsbeek et al., 1975; Rogers et al., 1977) indicated that about 80% of the total nonrespondent group did not appear at the assessment sessions because of conflicting school activities or illness. The remaining 20% did not seem to be available. They attended school infrequently, if at all (for practical purposes, they had dropped out), or they had moved out of the school attendance area. In either case, these students probably should not have been listed in the in-school population of eligibles.

Tables published in previous National Assessment reports showing response rates for age 17 generally contain percentages adjusted to account for those 17-year-olds listed but not attending school. But, since National Assessment has not had the resources to replicate the RTI study in recent assessments, the 20% figure used as a basis for adjusting these percentages may be outdated and thus, the percentages given in Table D-1 have not been adjusted. It seems likely that despite efforts to update the lists of eligibles, these lists still contain some percentage of students who have in effect left the schools. Therefore, the percentages listed for age 17 are probably underestimates of the actual response rates for 17-year-olds attending school.

APPENDIX E

COMPUTATION OF MEASURES OF ACHIEVEMENT, CHANGES IN ACHIEVEMENT AND STANDARD ERRORS

Several measures of achievement that National Assessment uses in its reports are described in Chapter 7 of this document. The sample design, as described in Chapter 4, is a complex, deeply stratified, multistage probability sample design. Measures of achievement are obtained by weighting individual responses appropriately. Reasonably good approximation of standard error estimates of these achievement measures can be obtained by applying the jackknife procedure to first-stage sampling units within strata, using the method of successive differences and accumulating across strata.

In this section, the measures of achievement are first defined in algebraic form, followed by a description of the jackknife method that National Assessment uses to estimate the standard errors of achievement measures.

Measures of Achievement

Based on the sample design, a weight is assigned to every individual who responds to an exercise administered in an assessment. The weight is the reciprocal of the probability of selecting a particular individual to take a particular exercise with adjustment for nonresponse. Since the probabilities of selection are based on an estimated number of people in the target age population, the weight for an individual estimates the number of similar people that individual represents in the age population. As explained in Appendix E, the weights are adjusted to reflect information from previous assessments on population distributions.

A sum of the weights for all individuals at an age level responding to an exercise is an estimate of the total number of people in that age population. A sum of weights for all individuals at an age responding correctly to an exercise is an estimate of the number of people in the age population who would be able to respond correctly if the entire population were assessed. These concepts also apply to any reporting group (e.g., defined by region, sex, and so on) and category of response (e.g., correct, incorrect and "I don't know").

Let W^{e}_{ihk} = sum of weights for respondents to exercise e who are in reporting subgroup i and who are in the kth replicate of the hth sampling stratum, and

C^{ej}_{ihk} = sum of weights for respondents to exercise e who are in reporting subgroup i, who are in the kth replicate of the hth sampling

stratum and who selected response category j (e.g., correct foil) for the exercise.

Note that $W^e_{ihk} = \sum_j C^{ej}_{ihk}$.

Then summing k over the n_h sample replicates in the stratum h, and summing over the H sampling strata,

$$W^e_{i++} = \sum_{h=1}^{H} \sum_{k=1}^{n_h} W^e_{ihk}$$

estimates the number of eligibles in the population who are in subgroup i.

Similarly, $C^{ej}_{i++} = \sum_{h=1}^{H} \sum_{k=1}^{n_h} C^{ej}_{ihk}$ estimates the number of eligibles in the population who are in subgroup i and who would select response category j for exercise e.

An estimate of the proportion of the eligibles in the age population in group i who would select response category j on exercise e is:

$$(1)\quad P^{ej}_i = C^{ej}_{i++}/W^e_{i++}.$$

In the special case where the proportion of all age-eligibles who would select response category j on exercise e is estimated, the index A (for ALL) will be used in place of i as follows:

$$(2)\quad P^{ej}_A = C^{ej}_{A++}/W^e_{A++}.$$

In National Assessment reports, the proportion in (1) multiplied by 100 is called the group percentage, and the proportion in (2) multiplied by 100 is called the national percentage. The difference between the proportion in subgroup i who would select category j on exercise e and the proportion in the nation is denoted by:

$$(3)\quad \Delta P^{ej}_i = P^{ej}_i - P^{ej}_A.$$

National Assessment also reports the arithmetic mean of the percentage of correct responses over sets of exercises corresponding to the measures in (1), (2) and (3). These means are taken over the set of all exercises or a subset of exercises classified by a reporting topic or content objective. The mean percentages of correct responses taken over m exercises in some set of exercises corresponding to measures (1), (2) and (3) are, respectively:

$$(4)\quad \overline{P}_i = \frac{1}{m} \sum_e C^e_{i++}/W^e_{i++},$$

$$(5)\quad \overline{P}_A = \frac{1}{m} \sum_e C^e_{A++}/W^e_{i++} \text{ and}$$

$$(6)\quad \overline{\Delta P}_i + \overline{P}_i - \overline{P}_A.$$

Note that the response category subscript j has been suppressed since the means are understood to be taken over the correct response category for each exercise.

Each of these six achievement measures is computed and routinely used in reports describing achievement data for any assessment. The simple difference in these measures between two assessments of the same exercise (or sets of exercises) provides six measures of change in achievement that are routinely used in National Assessment's change reports. The next section describes how standard errors are estimated for the 12 statistics

used in NAEP reports.

Computation of Standard Errors

In order to obtain an approximate measure of the sampling variability in the statistics (1) through (6), a jackknife replication procedure for estimating the sampling variance of nonlinear statistics from complex, multistage samples was tailored to National Assessment's sample design. Miller (1968, 1974) and Mosteller and Tukey (1977) provide information about the jackknife technique, while Folsom (1977) describes how the procedure is used in estimating standard errors for National Assessment's sample design.

To demonstrate the computational aspects of this technique, consider estimating the variance of the statistic in (1) -- the proportion of age-eligibles in subgroup i who would select response category j on exercise e.

This statistic is based on the data from all the n_h replicates in the H strata. Let P^{ej}_{i-hk} be defined as a replication estimate of P^{ej}_i and constructed from all the replicates excluding the data from replicate k in stratum h. These replication estimates are computed as if the excluded replicate had not responded, and a reasonable nonresponse adjustment is used to replace the data in replicate hk in estimating P^{ej}_i. Several choices for replacing the data in replicate hk are available. In order to obtain a convenient and computationally efficient algorithm for approximating standard errors, National Assessment replaces C^{ej}_{ihk} and W^{e}_{ihk} from the hkth replicate with corresponding sums from another paired replicate in the same stratum. The replicate estimate is then computed. The replicate estimates to be used in the calculations are determined by arranging all the replicates in each stratum into successive pairs. That is, replicate 1 is paired with replicate 2, replicate 2 with replicate 3, 3 with 4,...(n_h-1) with n_h and replicate n_h with replicate 1.

The contribution to the variance of P^{ej}_i by each pair of replicates is the change in the value of the statistic incurred by replacing the data from each replicate in the pair with the data from the other replicate in the pair and recomputing P^{ej}_i in the usual way. This produces two replicate estimates. Squaring the difference between these replicate estimates and then dividing by eight measures the contribution of this pair of replicates to the total variance. The sum of these contributions over all n_h successive pairs in the stratum is the contribution by stratum h to the total variance. The square root of the sum of the H stratum contributions is the estimate of the standard error of P^{ej}_i.

Algebraically, the two replicate estimates for the pair k, $k+1$ (where $k=1,\ldots n_h$ and $n_h+1=1$) are:

$$(7)\quad P^{ej}_{i\text{-}hk} = \frac{C^{ej}_{i++} - C^{ej}_{ihk} + C^{ej}_{ih(k+1)}}{W^{ej}_{i++} - W^{ej}_{ihk} + W^{ej}_{ih(k+1)}}$$

and

$$(8)\quad P^{ej}_{i\text{-}h(k+1)} = \frac{C^{ej}_{i++} - C^{ej}_{ih(k+1)} + C^{ej}_{ihk}}{W^{ej}_{i++} - W^{ej}_{ih(k+1)} + W^{ej}_{ihk}}.$$

The contribution to the total variance from stratum h is:

$$(9)\quad \text{var}\,(P^{ej}_{ih}) = \frac{1}{8}\sum_{k}^{n_h}\left(P^{ej}_{i\text{-}hk} - P^{ej}_{i\text{-}h(k+1)}\right)^2.$$

And finally, an estimate of the standard error of P^{ej}_{i} is:

$$(10)\quad SE\,(P^{ej}_{i}) = \left(\sum_{h}^{H} \text{var}\; P^{ej}_{ih}\right)^{1/2}.$$

Multiplying P^{ej}_{i} by 100 yields the percentage of response to category j. Multiplying $SE(P^{ej}_{i})$ by 100 yields the corresponding estimated standard error of the percentage.

In general, the jackknifed standard errors of the proportion estimates will be larger than the simple random sampling formula $(PQ/N)^{1/2}$, where $P=P^{ej}_{i}$, $Q=1-P$ and N is the number of sampled respondents in subgroup i who took the exercise. The larger size of $SE(P^{ej}_{i})$ reflects mainly the loss of precision due to cluster-sampling of schools and students. The standard errors for the achievement measures (2) through (6) are computed through a series of steps analogous to those followed in computing $SE(P^{ej}_{i})$.

The standard errors for the differences between two assessments for any of the achievement measures (1) through (6) are computed as the square root of the sum of the squared standard errors from each of the separate assessments.

The size of the standard errors depends largely not only on the number of replicates and schools included in the sample, but also on the number of respondents in each of the reporting groups. Table E-1 shows the average number of students responding to an exercise booklet for each of the reporting groups for each age for each assessment year. Table E-2 shows National Assessment's current estimates of the proportions of students in each reporting group at each age.

TABLE E-1. Average Number of Respondents in Reporting Groups Taking an Item Booklet for All Three Age Groups

	Age 9 1979-80	Age 13 1979-80	Age 17 In School 1979-80
Nation	2,646	2,772	2,579
Region			
Northeast	628	690	604
Southeast	621	634	559
Central	735	775	750
West	662	672	667
Sex			
Male	1,330	1,364	1,300
Female	1,316	1,407	1,279
Race/ethnicity			
White	2,028	2,144	2,090
Black	382	412	330
Hispano	190	176	124
Other	46	39	35
Parental education			
Not graduated high school	180	293	343
Graduated high school	673	873	869
Post high school	1,007	1,314	1,280
Unknown	786	292	87
Type of community			
Rural	266	274	247
Disadvantaged urban	264	279	278
Advantaged urban	263	274	260
Other	1,853	1,946	1,794
Size of community			
Big cities	582	510	537
Fringes around big cities	450	552	434
Medium cities	273	472	481
Small places	1,340	1,238	1,128
Grade			
3, 7, 10	708	740	330
4, 8, 11	1,873	1,954	1,981
12	--	--	230
Other	64	78	38

Note: Group totals may not equal the nation due to rounding differences.

TABLE E-2. Estimated Current Population Proportions of National Assessment Reporting Groups for In-School Students

Reporting Groups	Age 9	Age 13	Age 17
Sex			
Male	.50	.50	.48
Female	.50	.50	.52
Race/ethnicity			
White	.79	.80	.83
Black	.14	.13	.12
Other	.07	.07	.05
Region			
Northeast	.25	.25	.25
Southeast	.22	.23	.20
Central	.27	.27	.29
West	.26	.25	.26
Parental education			
Not graduated high school	.09	.13	.15
Graduated high school	.24	.32	.32
Post high school	.33	.42	.48
Unknown	.34	.13	.05
Type of community			
Rural	.08	.10	.08
Disadvantaged urban	.07	.07	.09
Advantaged urban	.11	.11	.11
Other	.74	.72	.72
Size of community			
Big cities	.20	.21	.19
Fringes around big cities	.22	.22	.26
Medium cities	.12	.11	.11
Small places	.46	.46	.44
Grade in school			
<3, <7, <10	<.01	.02	.02
3, 7, 10	.23	.25	.13
4, 8, 11	.75	.72	.75
<4, <8, 12	<.01	<.01	.10
Other	<.01	<.01	<.01

APPENDIX F

ADJUSTMENT OF RESPONDENT WEIGHTS BY SMOOTHING TO REDUCE RANDOM VARIABILITY OF ESTIMATED POPULATION PROPORTIONS

Background

As noted elsewhere, a weight is assigned to every individual who responds to an exercise administered in an assessment. The weight is the reciprocal of the probability of selection of the individual with adjustment for nonresponse. The weight for an individual estimates the number of people that the individual represents in the age population. The sum of the weights of all individuals at an age level who responded to an exercise is an estimate of the total number of people in that age population in the year that the exercise was assessed. Similarly, the sum of weights for all individuals who took the exercise and who also are members of some demographic category (such as blacks) gives an estimate of the number of people in the age population, for the year, who are also members of the category. The ratio of the two totals estimates the proportional representation of the demographic category in the age population for the given year.

Separate estimates of the proportional representation of the various demographic subgroups are provided by each booklet administered to a particular age group in a given year. Due to random sampling variability, the estimates of population proportions for a given year based on single booklets will vary. There is also random sampling variation in estimates of population proportions from year to year in addition to whatever trends in population proportions over time that might exist.

It is desirable to reduce the random variability of population proportions as much as possible since this variability has an effect on performance estimates. For example, the percentage of acceptable responses for an age group is a function of the relative proportions of high-performing and low-performing groups. If the relative proportions of these groups are very different in different assessments due to sampling variability, then a portion of the change in percentage of acceptable responses for an age group could be attributable to yearly sampling differences in the relative proportions of high- and low-achieving groups.

In addition to reporting performance estimates for an age group as a whole, National Assessment also reports performance for various subpopulations, such as whites or blacks. Because variability of subgroups within these subpopulations (such as males and females within the white subpopulation) influences the performance estimates for the subpopulations, it is desirable that fluctuations of proportions of all subgroups of each subpopulation be reduced as much as possible.

For each age and year, each of the

various booklets administered provides estimates of a given population proportion. Since these estimates are subject to booklet-to-booklet variability, a better estimate of the population proportion, which will have reduced variability, is obtained by combining the information from all booklets. However, these proportions vary from year to year due to random sampling variability or systematic differences in sampling procedures. An even better estimate of population proportions for any single year can be obtained by smoothing the proportions over several assessment years. The word "smoothing" is used here in the sense of fitting a smooth curve to a sequence of numbers by robust/resistant procedures (Tukey, 1977). Smoothing estimates of population proportions reduces a large portion of the sampling variability while preserving, as far as possible, actual trends occurring in the age population.

After the population proportions have been smoothed, adjusted weights are derived for the assessed individuals so that the population proportions computed using the adjusted weights are equal to the smoothed proportions. The adjusted weights are then used for all analyses.

Smoothing Procedures Used by National Assessment

The most direct way to smooth proportions is first to classify people into mutually exclusive multiway cells on the basis of their membership in categories of various important variables and then to smooth the proportions within each of the resulting multiway cells across years. Unfortunately, this procedure tends to produce a large number of cells with few people and, consequently, quite unstable estimates of smoothed proportions.

To circumvent this difficulty, National Assessment has utilized various smoothing procedures. These procedures, which are all basically weighting-class adjustments applied independently to each age, are designed to control, to varying degrees, fluctuations in certain key subgroups while avoiding, as much as possible, instabilities due to small cells.

The procedure used in 1979-80 has the following characteristics:

1. It produces a single adjusted weight for each individual.

2. It affords good control on the distribution of proportions of certain key variables.

3. It tends to produce stability of performance estimates.

4. It is relatively easy to implement.

Even though adjusted weights using this procedure differ slightly from the corresponding adjusted weights from the other procedures that have previously been employed, National Assessment intends to use weights obtained using this procedure for all future analyses of data assessed in earlier years. This is simply because we believe weights obtained through this procedure to be the best available.

The Current Smoothing Procedure

The first step in the smoothing procedure involved the partitioning of

the population of age-class eligibles into the six smoothing cells given in Table F-1. The same cells were used for all ages.

TABLE F-1. Smoothing Cells Used for the 1979-80 Smoothing Procedure

Cell	Race	Region	Community Size
1	White	All	Big city + fringe (BC+FR)
2	White	All	Medium city (MC)
3	White	All	Small places (SP)
4	Black	Southeast	All
5	Black	Not Southeast	All
6	Other	All	All

Then, for each age and every year, the proportion of the population in each of the cells was estimated. For a given age and year, the proportion of the population in a particular cell was computed as the sum of weights of all respondents assessed in the given year who were of the specified age and who belonged in the cell, divided by the total of the weight of all respondents of the given age assessed in that year.

Each of the six cells was comprised of a sequence of estimated population proportions corresponding to the various years of assessment. Each such sequence of proportions was then smoothed by fitting robust/resistant lines. Using data from the U.S. Census Bureau and the Current Population Survey, trends in enrollment by age and race and by age and region were obtained. The data from these surveys were adjusted to correspond with National Assessment definitions as much as possible. The resistant lines within the smoothing cells were constrained to satisfy the trend from the U.S. Census and Current Population Survey data.

The final step in the smoothing procedure was to adjust the respondents' weights to be consistent with the smoothed proportions. Since each respondent takes only one booklet, the weight adjustments were done independently for each booklet. For a given age, year and booklet, population proportions using the original weights were obtained for each of the smoothing cells. Then the weights of all respondents of a given cell were multiplied by the ratio of the smoothed cell proportion to the proportion using the original weights. This produced the adjusted weights that were used in all analyses.

Adjustment of Weights by Users

The smoothed population proportions for 9-, 13- and 17-year-olds (in-school only) are given in Tables F-2, F-3 and F-4, respectively. The columns of each table represent the smoothing cells, while the rows represent the assessment years. For example, the smoothed population proportion of 9-year-olds in smoothing cell 2 (whites in medium cities) for 1972-73 is 0.1152.

TABLE F-2. Smoothed Frequencies From 10-Year Smooth by Smoothing Cell and Year for 9-Year-Olds

Race	1 White	2 White	3 White	4 Black	5 Black	6 Other
Region	All	All	All	SE+	Not SE	All
Size of Community	BC+FR#	MC++	SP##	All	All	All
Year						
1970-71	0.3299	0.1203	0.3574	0.0557	0.0736	0.0631
1971-72	0.3232	0.1177	0.3647	0.0562	0.0743	0.0638
1972-73	0.3165	0.1152	0.3720	0.0568	0.0749	0.0646
1973-74	0.3098	0.1126	0.3793	0.0573	0.0756	0.0654
1974-75	0.3030	0.1101	0.3866	0.0579	0.0763	0.0661
1975-76	0.2963	0.1076	0.3938	0.0584	0.0770	0.0668
1976-77	0.2896	0.1050	0.4011	0.0590	0.0776	0.0676
1977-78	0.2829	0.1025	0.4084	0.0596	0.0783	0.0684
1978-79	0.2762	0.1000	0.4157	0.0601	0.0790	0.0691
1979-80	0.2694	0.0974	0.4230	0.0607	0.0797	0.0698

+SE = Southeast.
#BC+FR = big cities + fringes.
++MC = medium cities.
##SP = small places.

To adjust respondent weights to be consistent with the smoothed proportions, the following procedures were followed:

1. For each booklet, respondents were classified according to smoothing cell, and the raw population proportions for each cell were obtained. For example, the raw proportions for a booklet given to 9-year-olds in smoothing cell 4 was the total of the weights of all 9-year-olds receiving the booklet who were black and in the Southeastern region, divided by the total of the weights of all respondents receiving the booklet.

2. For each booklet and smoothing cell, a weight adjustment factor as the ratio of the smoothed population proportion (for the appropriate age, year and smoothing cell) over the raw population proportion was obtained.

3. The adjusted weights for an individual were the product of that individual's original weight and the appropriate adjustment factor.

Changes in Smoothed Proportions as New Assessments Are Completed

Every time an assessment is completed, a new time point is added to each of the sequences of population proportions within the smoothing

TABLE F-3. Smoothed Frequencies From 10-Year Smooth by Smoothing Cell and Year for 13-Year-Olds

Race Region Size of Community	1 White All BC+FR#	2 White All MC++	3 White All SP##	4 Black SE+ All	5 Black Not SE All	6 Other All All
Year						
1970-71	0.3327	0.1113	0.3748	0.0523	0.0679	0.0610
1971-72	0.3279	0.1106	0.3779	0.0524	0.0694	0.0618
1972-73	0.3232	0.1098	0.3180	0.0525	0.0709	0.0626
1973-74	0.3184	0.1091	0.3841	0.0526	0.0724	0.0634
1974-75	0.3137	0.1084	0.3872	0.0527	0.0739	0.0642
1975-76	0.3089	0.1076	0.3903	0.0528	0.0754	0.0650
1976-77	0.3042	0.1069	0.3933	0.0528	0.0770	0.0658
1977-78	0.2994	0.1062	0.3964	0.0529	0.0785	0.0666
1978-79	0.2946	0.1055	0.3995	0.0530	0.0800	0.0674
1979-80	0.2899	0.1047	0.4026	0.0531	0.0815	0.0682

+SE = Southeast.
#BC+FR = big cities + fringes.
++MC = medium cities.
##SP = small places.

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cells. This means that, even though robust/resistant procedures are used, the addition of a new point may somewhat change the values of smoothed proportions for prior years. Additionally, any changes in methodology will impact the estimates.

This means that the smoothed proportions, with the addition of the next assessment data, are apt to differ somewhat from the corresponding smoothed proportions without the new data. National Assessment has adopted the philosophy that the smoothed proportions, based on all currently available data using the best available algorithm, are the best available. Therefore, all subsequent analyses, for any year, will be done using this best-available information, even though this may produce estimates that slightly differ from prior values.

TABLE F-4. Smoothed Frequences From 10-Year Smooth
by Smoothing Cell and Year for In-School 17-Year-Olds

	1	2	3	4	5	6
Race	White	White	White	Black	Black	Other
Region	All	All	All	SE+	Not SE	All
Size of Community	BC+FR#	MC++	SP##	All	All	All
Year						
1970-71	0.3634	0.1205	0.3670	0.0438	0.0581	0.0472
1971-72	0.3577	0.1199	0.3704	0.0444	0.0597	0.0478
1972-73	0.3519	0.1194	0.3738	0.0451	0.0614	0.0484
1973-74	0.3462	0.1188	0.3772	0.0457	0.0630	0.0491
1974-75	0.3404	0.1183	0.3806	0.0463	0.0647	0.0497
1975-76	0.3347	0.1177	0.3840	0.0470	0.0663	0.0503
1976-77	0.3290	0.1172	0.3874	0.0476	0.0679	0.0509
1977-78	0.3232	0.1166	0.3907	0.0482	0.0696	0.0515
1978-79	0.3175	0.1161	0.3941	0.0489	0.0712	0.0522
1979-80	0.3117	0.1155	0.3975	0.0495	0.0729	0.0528

+SE = Southeast.
#BC+FR = big cities + fringes.
++MC = medium cities.
##SP = small places.

GLOSSARY OF NATIONAL ASSESSMENT TERMS

Acceptable response. Any response to an exercise that demonstrates achievement of the objective measured by that exercise.

Administration time. The total time allowed on the paced audio tape for an exercise. (Includes the time allowed for the stimulus and the response.)

Administration timetable. Time periods during the school year when the various age groups are assessed. The time periods are:

October-December	13-year-olds
January-February	9-year-olds
March-May	17-year-olds

Age group or age level. Three age groups have been sampled in all three reading assessments: 9-year-olds, 13-year-olds, 17-year-olds attending school and also 17-year-olds who dropped out or graduated early. Birth date ranges for each age group in each of the three assessments are as follows:

Assessment	Age 9	Age 13	Age 17
1970-71	1961	1957	10/53-9/54
1974-75	1965	1961	10/57-9/58
1979-80	1970	1966	10/62-9/63

Assessment. The documentation of the progress in knowledge, skills and attitudes of American youth. Measures are taken at periodic intervals for each learning area, with the goal of determining trends and reporting the findings to the public and to the education community.

Assessment administrator. Individual employed to administer the assessment in participating schools.

Background questions. Questions about respondents' reading experiences in school and out of school were included. Standard background questions asked in every learning area are found on the back pages of the item booklets and include such things as level of parental education and reading materials in the home. Background questions used in the 1979-80 reading/literature assessment appear in Appendix C.

Booklet. Items (exercises) are presented to respondents in booklets. Booklets are designed to be scored by optical scanning machines. Each booklet contains (1) instructions for answering items and sample items, (2) assessment items and (3) background questions. Each booklet contains approximately 30-35 minutes of assessment items and 10-15 minutes of introductory material and background questions.

Category (scoring). A classification of a response to an open-ended exercise. See scoring guide.

Category within a variable. A subclassification within a variable. For example, male and female are categories of the variable sex. See reporting groups.

Difficulty level. The percentage of acceptable responses to an exercise.

Exercise. A task designed to measure an objective. Because NAEP does not administer "tests," but instead describes educational achievement over time, the term "exercise" is often used instead of the term "item" or "test item." The terms "item" and "exercise" are used synonymously in this report.

Exercise booklet. See booklet.

Exercise part. See item part.

Exercise pool. The entire set of exercises prepared for a learning area. This set includes recycled exercises, exercises developed for previous assessments but not used due to exercise booklet or budgetary constraints and newly developed exercises.

Field test. A pretest of exercises to obtain information regarding clarity, difficulty levels, timing, feasibility and special administrative problems needed for revision and selection of exercises to be used in the assessment.

Grade in school. Results are reported for 9-year-olds in the 3rd and 4th grades; 13-year-olds in the 7th and 8th grades; and 17-year-olds in the 10th, 11th and 12th grades.

Group administration. Booklets were administered to groups of 10 to 25 students in 1979-80. In 1970-71 and 1974-75, group size was 12 respondents. A paced audio tape was used to provide uniform instructions.

Hand scoring (scoring). The coding of responses in a format compatible with the optical scanning equipment being used. Multiple-choice exercises can be directly machine scored; however, responses to open-ended exercises must be coded in scoring ovals so that they can then be machine scored. See scoring guide.

ID number. An identification number referring to the unique number assigned to each respondent. This number is assigned to preserve the anonymity of each respondent. NAEP does not keep records of the names of any individuals.

Item. See exercise.

Item booklet. See booklet.

Item part. Each part of an item that asks a separate question. Parts may all pertain to one stimulus, such as a graph or a table, or may concern the same topic.

Jackknife. The name of the algorithm used by NAEP to estimate standard errors of percentages and other statistics.

Learning area. One of the areas assessed by National Assessment: reading/literature, writing, mathematics, science, citizenship/social studies, art, music, career development. Also called "subject area."

Level of parental education. These levels are described in Appendix B.

Modal grade. The grade in which the majority of each in-school age group is enrolled. For 9-year-olds, the modal grade is the 4th grade; for 13-year-olds, the 8th grade; and for 17-year-olds, the 11th grade.

Objective. A desirable education goal agreed upon by scholars in the field, educators and concerned lay persons, and established through

the consensus approach.

Objectives redevelopment. After the initial assessment of a learning area, one of the first steps in preparing for reassessment is a review of the learning-area objectives. This is carried out by scholars in the field, educators and concerned lay persons. These reviews may result in revision, modification or total rewriting of the learning-area objectives to reflect current curricular goals and emphases; they may also result in the endorsement of the objectives from the previous assessment as adequate for the next assessment.

Open-ended exercise. A nonmultiple-choice exercise that requires some type of written or oral response.

Paced audio tape. A tape recording that accompanies each booklet to assure uniformity in administration. Instructions are played back from the tape recording so that reading difficulties will not interfere with an individual's ability to respond. Response time is included on the tape.

Primary sampling unit (PSU). First-stage sampling units, typically a county or a group of contiguous counties.

Principal's questionnaire. A data collection form given to school officials. The officials respond to questions concerning enrollments, size of the community, occupational composition of the community, and so forth. Samples of these questionnaires are found in Appendix C. See also supplementary principal's questionnaire.

PSU. See primary sampling unit.

Public-use data tapes. Computer tapes containing respondent-level exercise and background/demographic data and machine-readable documentation. These tapes are available for use by external researchers wishing to do secondary analyses of National Assessment data.

Racial/ethnic category. For the reading assessments, results are reported for whites, blacks and Hispanos (1979-80 only).

Receipt control. Procedures implemented by scoring staff to check in and screen materials from the field. Information gained from receipt control procedures is relayed to assessment administrative staff so that any errors may be corrected.

Recycled exercises. The set of exercises that is kept secure from one assessment to the next that will be used to measure changes (growth, stability or decline) in performance for the learning area.

Region. One of four geographical regions used in gathering and reporting data: Northeast, Southeast, Central and West. States included in each region are shown in Appendix B.

Released exercise. An exercise for which results and exercise text have been reported to the public.

Released exercise set. A set of released exercises, including documentation and scoring guides, that can be purchased from National Assessment. Data for the released exercise set are included as addendum pages.

Reporting groups. Categories of variables for which National Assess-

ment data are reported. Variable categories are defined in Appendix B.

Rescore. If an open-ended exercise was scored under different conditions than presently held or if passage of time might affect scoring, responses from a previous assessment may be rescored at the same time that responses from a later assessment are scored. Responses from an earlier assessment also may be held and not scored so that they can be scored with responses from a later assessment.

Respondent. A person who responds to the exercises in an assessment booklet.

Response options. Different alternatives to a multiple-choice question that can be selected by the respondent.

Review conference. A conference held to review the objectives of a learning area to assure their acceptance as measures of the objectives by scholars, educators and lay persons or to review exercises for racial, ethnic, social or regional bias.

Sample. National Assessment does not assess an entire age population but rather selects a representative sample from the age group to answer assessment items. (See Chapter 4 for a description of National Assessment sampling procedures.)

Scoring guide. A guide for hand scoring an open-ended exercise that specifies descriptive or diagnostic categories by giving definitions and sample responses.

Scoring ovals. Scannable ovals printed beside multiple-choice options and printed at the bottom of the page for open-ended exercises (to be used in hand scoring). When ovals are marked, they can be scored by machine and responses recorded by computer.

Sex. Results are reported for males and females.

Size of community. Results are reported for four size-of-community categories: big cities, fringes around big cities, medium cities and small places. These categories are defined in Appendix B.

SMSA. Standard Metropolitan Statistical Area. SMSAs are economic and social units defined by the U.S. Bureau of the Census.

Standard error. A measure of sampling variability for a statistic. Because of NAEP's complex sample design, standard errors are estimated by jackknifing first-stage sample estimates.

Stem. The portion of an exercise that states the problem or asks the question.

Stimulus. For reading exercises, this is a visual stimulus used as part of the stem.

Subject area. See learning area.

Subpopulation or subgroup. Groups within the national population, such as males and females, for which data are reported.

Supplementary principal's questionnaire. A data collection form given to school officials. On this form, officials are asked to respond to questions concerning course offerings, materials and staffing specific to the learning

area being assessed. A sample of this questionnaire is found in Appendix C. See also principal's questionnaire.

Tapescript. A script prepared for the announcer to use in producing the paced tape. It indicates exactly what is to be read or not read aloud to the students and indicates the amount of response time allowed for each exercise. See paced audio tape.

Timing. Most NAEP exercises are administered with a paced audio tape to standardize data collection conditions. The tape includes the amount of time students are allowed to respond to each exercise.

Type of community. Results are reported for three type-of-community categories: disadvantaged urban, advantaged urban and rural. Definitions of these categories are found in Appendix B.

User tape. See public-use data tape.

Variable. A classification of respondents. Standard reporting variables are: region, sex, race, level of parental education, size of community, type of community and grade in school.

Weight. A multiplicative factor equal to the reciprocal of the probability of a respondent being selected for assessment with adjustment for nonresponse -- an estimate of the number of persons in the population represented by a respondent in the sample. Theoretically, the sum of weights for all respondents at an age level is equal to the number of persons in the country at that age level.

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